The PHOTOFACT® Servicer

SET 569 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★MARCH 1962

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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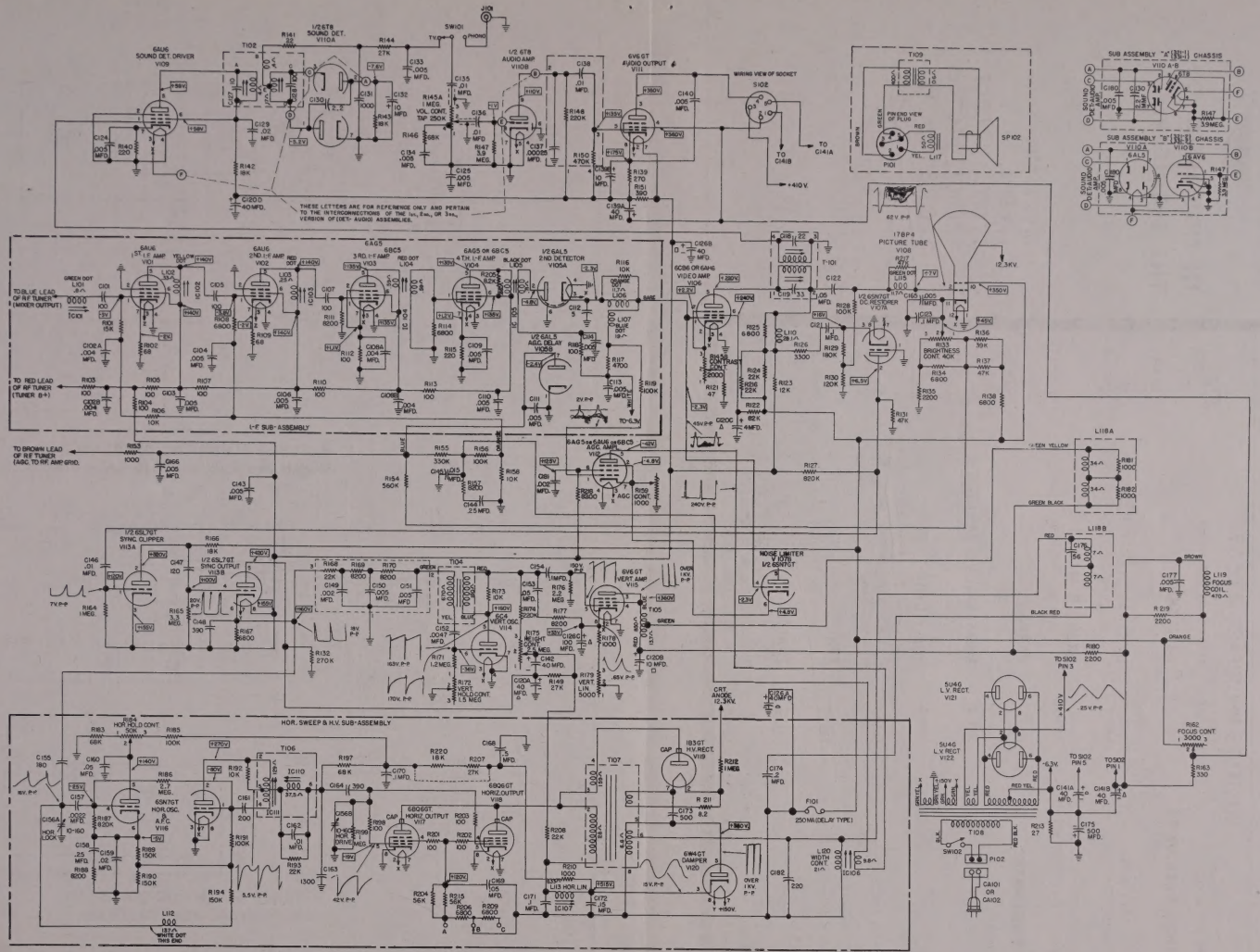
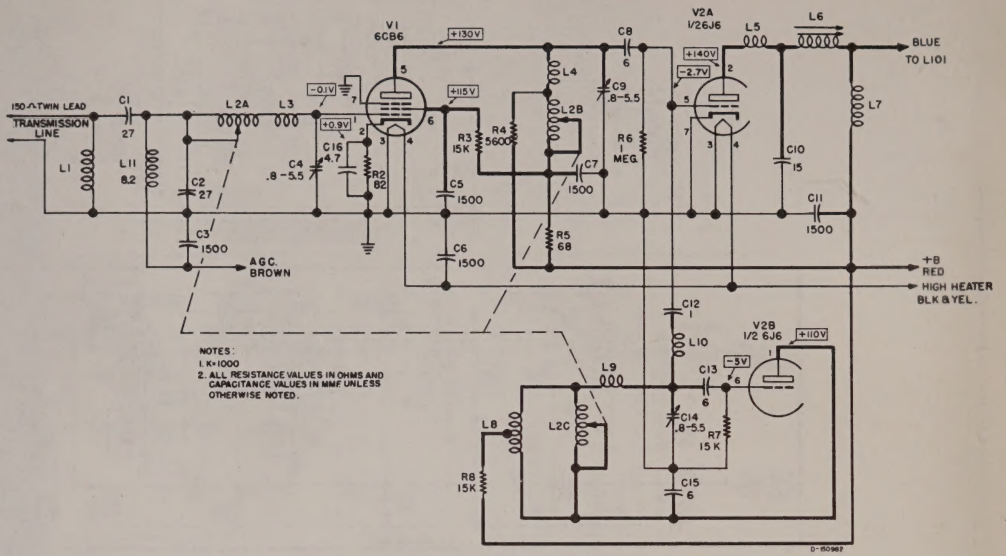
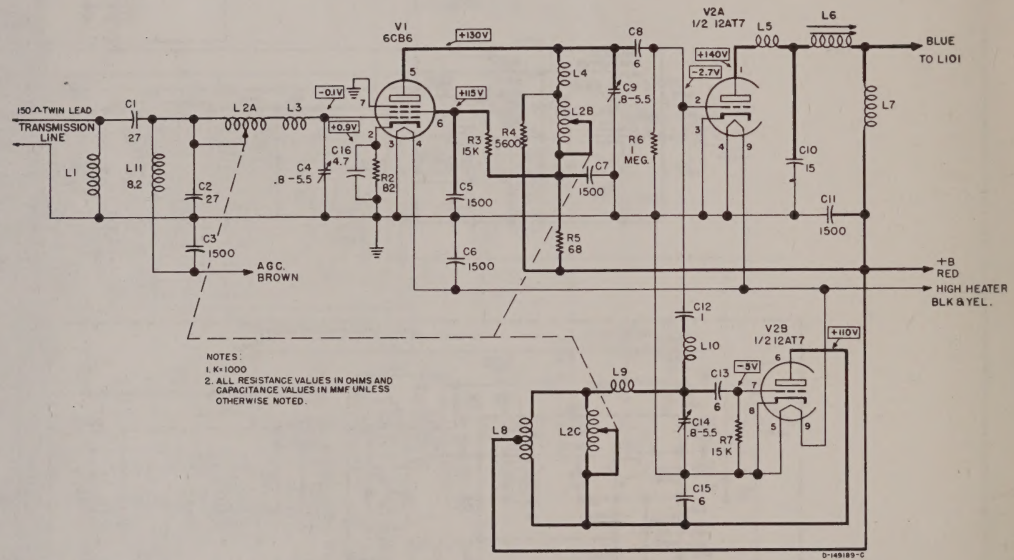


CROSLEY MODELS 17CDC1, 17CDC2, 17CDC3, 17CDC4,
17COC1, 17COC2, 17COC3 (CH. 331, -1, -2) (REVISED)

Schematic Diagram Courtesy of Crosley Division, Avco Corp.



R. F. TUNER SCHEMATIC DIAGRAM
(Models Equipped with 6J6 tube)



R. F. TUNER SCHEMATIC DIAGRAM
(Models Equipped with 12AT7 tube)

Schematic Diagram Courtesy of Crosley Division, Avco Corp.

PHOTOFACT® Folder

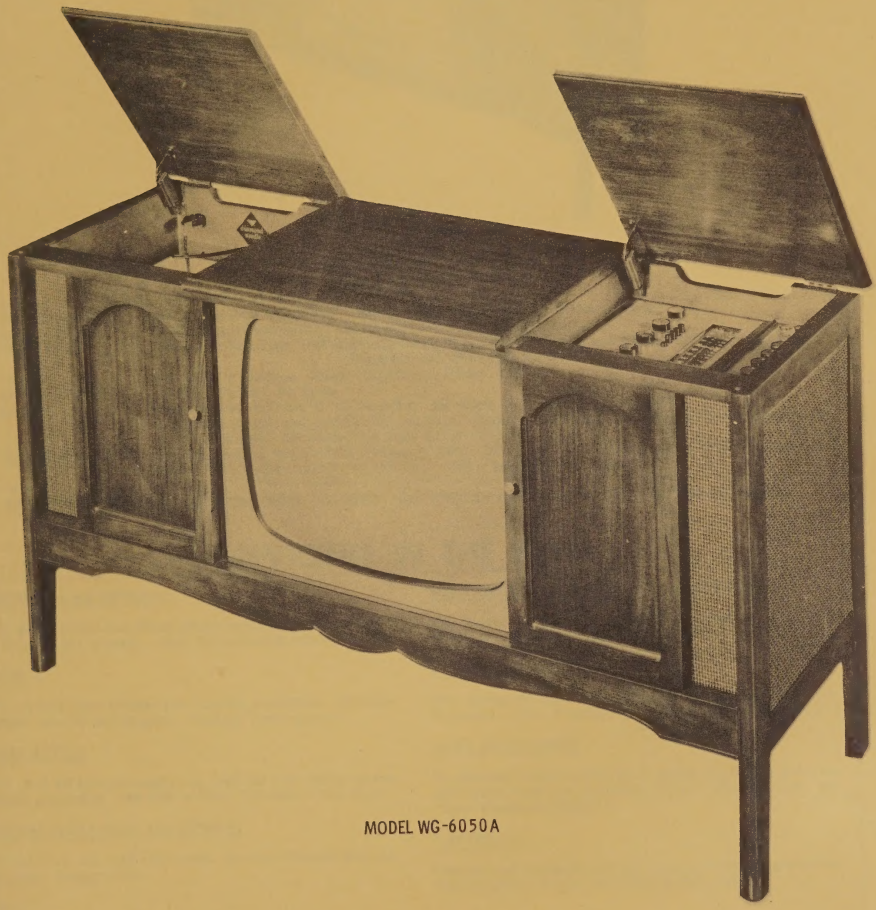
AIRLINE MODELS WG-6050A/ 51A/52A, WG-6150A/51A/52A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIRLINE MODELS WG-6050A/ 51A/52A, WG-6150A/51A/52A



MODEL WG-6050A

AIRLINE MODELS WG-6050A/ 51A/52A, WG-6150A/51A/52A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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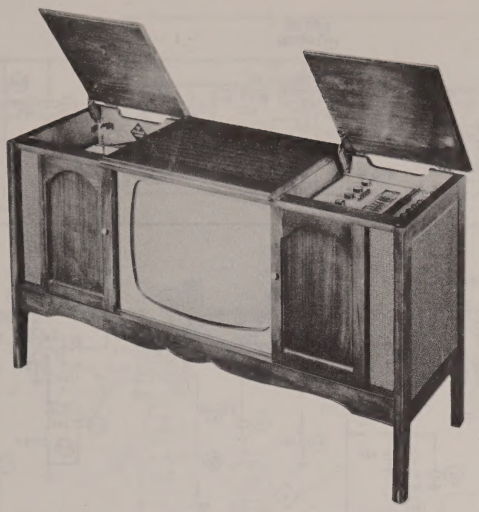
DATE 3-62 SET 569 FOLDER 1

SET 569 FOLDER 1

AIRLINE MODELS WG-6050A/ 51A/52A, WG-6150A/51A/52A

AIRLINE MODELS WG-6050A/ 51A/52A, WG-6150A/51A/52A



MODEL WG-6050A

TRADE NAME	Airline Models WG-6050A, -6051A, -6052A; WG-6150A, -6151A, -6152A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	Television Receiver, FM-AM Radio (with Dual Channel Amp.), and 4 Speed Automatic Record Changer* #28A257 (VM-1234-385).
TUBES	TV: VHF - Thirteen, UHF - Fourteen Radio: Twelve
POWER SUPPLY RATING	110-120 Volts AC, 60 Cycle With Function Selector in TV Position: 225 Watts, 2.1 Amp. @ 117 Volts AC With Function Selector in AM, FM, or Phono Position: 95 Watts, .85 Amp. @ 117 Volts AC (Less TV Chassis only: 130 Watts, 1.2 Amp. @ 117 Volts AC Motor)
TUNING RANGE	TV: Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) Radio: BC - 535-1620KC (455KC IF) FM - 88-108MC (10.7MC IF)

* FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR UNIT - PHOTOFACT SET 436 FOLDER 18

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

For picture tube and safety glass cleaning, it is necessary to remove the chassis. (See "Disassembly Instructions".)

FUSE

TV: A fuse wire is used for filament protection. (For location, see M3 in "Chassis - Bottom View" photo.)

FUSE DEVICE

TV: A 4.5Ω fusible resistor is used for low voltage power supply protection. See R66 in photo "Chassis - Top View".

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of a Range Control. (See "Tube Placement Chart" for location.)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Trimmer. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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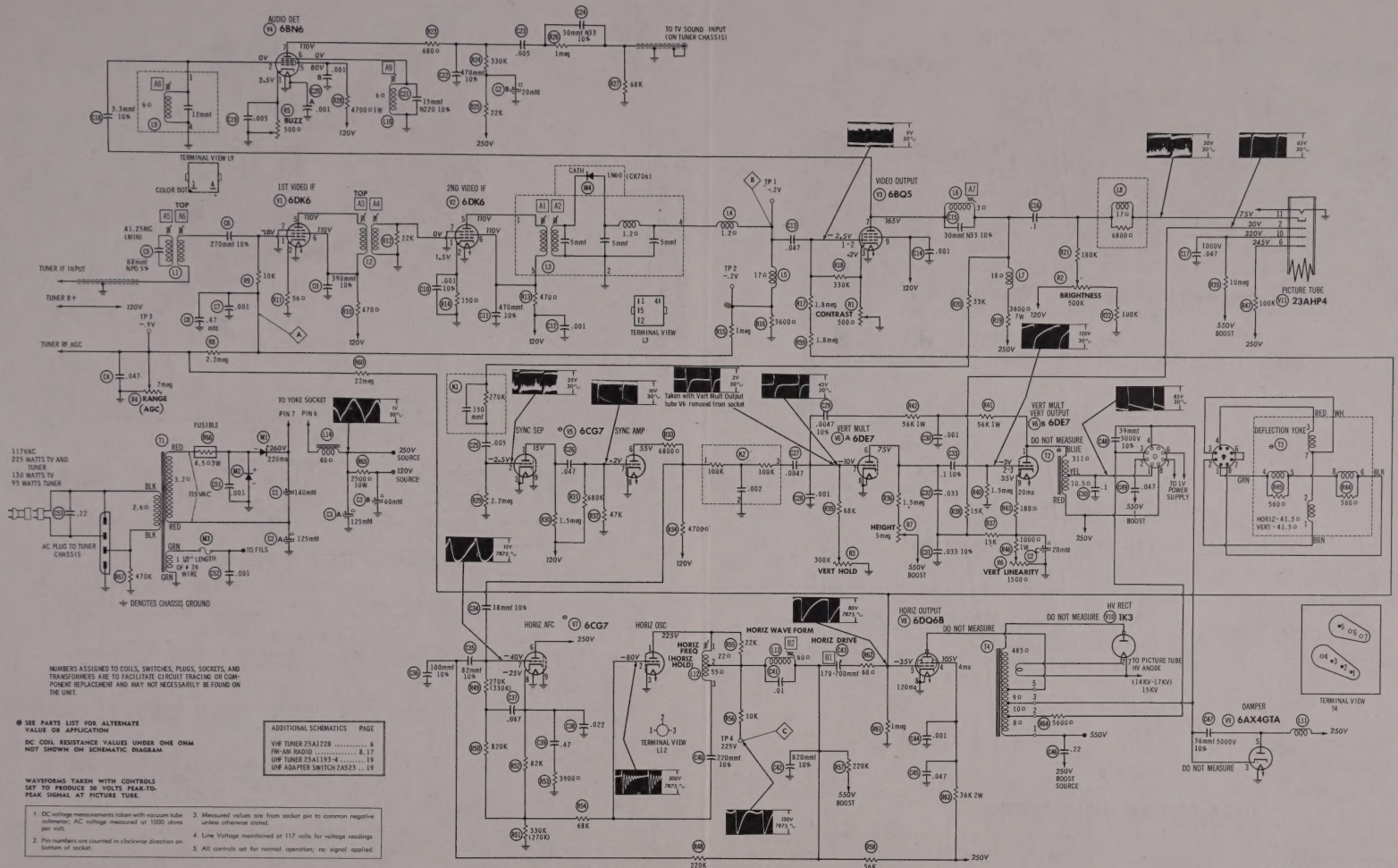
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of LC304

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America


AUDIO DET V4 6BN6
TO TV SOUND INPUT (ON TUNER CHASSIS)
TERMINAL VIEW L9
COLOR DOT
1ST VIDEO IF V1 6DK6
2ND VIDEO IF V2 6DK6
CATH
CK706J
TERMINAL VIEW L3
VIDEO OUTPUT V3 6BQ5
BRIGHTNESS 500K
CONTRAST 500
PICTURE TUBE V11 23AHP4
TUNER IF INPUT
TUNER B+
TUNER IF AGC
RANGE (AGC)
TO YOKE SOCKET
FUSIBLE
117VAC 225 WATTS TV AND TUNER 130 WATTS TV 95 WATTS TUNER
AC PLUG TO TUNER CHASSIS
TO FILS
DENOTES CHASSIS GROUND
SYNC SEP V5 6CG7
SYNC AMP
VERT MULT V5 A 6DE7
VERT MULT VERT OUTPUT V6 B 6DE7
DO NOT MEASURE
DEFLECTION YOKE
TO LV POWER SUPPLY
HEIGHT
VERT HOLD
VERT LINEARITY
BOOST
Taken with Vert Mult Output tube V6 removed from socket
HORIZ AFC V7 6CG7
HORIZ OSC
HORIZ WAVE FORM
HORIZ DRIVE
HORIZ FREQ (HORIZ HOLD)
HORIZ OUTPUT V8 6DQ6B
HV RECT V10 1K3
TO PICTURE TUBE HV ANODE
(14KV-17KV) 15KV
DAMPER V9 6AX4GTA
TERMINAL VIEW T4
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
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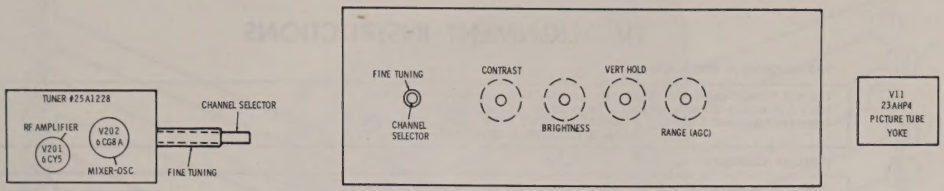
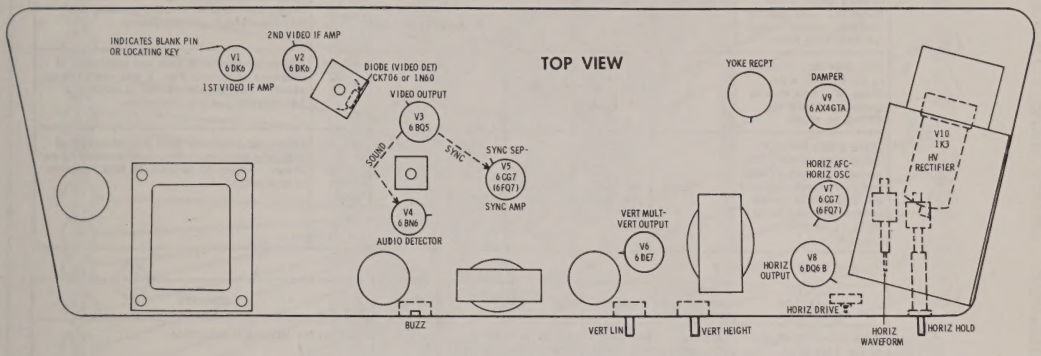
FM-AM RADIO 8, 17
UHF TUNER 25A1193-4 19
UHF ADAPTER SWITCH 2A523 .. 19
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1962
AIRLINE MODELS WG-6050A/ 51A/52A, WG-6150A/51A/52A

TUBE PLACEMENT CHART
TV





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rectifiers M1, M2

SWEEP FAILURE
No raster, has sound V7, V8, V9, V10, V11
No vertical deflection V6
Poor vert. linearity or foldover V6
Poor horiz. linearity or foldover V7, V8, V9
Narrow picture V7, V8, V9, M1, M2
Vert. off freq. V6
Horiz. off freq. V7

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V11
Has pic, no sound V4, (See Audio Amp. & Output on Radio Chassis)

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

TV ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point Ⓐ. **Positive to chassis.**
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .01mfd to pin 1 (grid) of 2nd Video IF. Low side to chassis. Adjust output for 4VP-P on scope.	44.0MC (10MC Swp.)	42.4MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 47K to point Ⓑ. Low side to chassis. (Across Video Det. Load)	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 controls marker position and A2 controls gain and symmetry.
2.	High side thru .01mfd to pin 1 (grid) of 1st Video IF. Low side to chassis. Adjust for 4VP-P on scope.	"	42.4MC 43.5MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A3 controls marker position and A4 controls gain and symmetry.
3.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC 42.4MC 43.5MC 44.5MC 45.75MC	"	"	A5, A6, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A5 to place 41.25MC marker in trap notch.

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of Video Output. Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	AC probe to pin 11 (cathode) of picture tube. Common to chassis. Use 0-10V AC scale.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength at the antenna terminals until a hiss is heard in the sound similar to super-regeneration.
Adjust A8, A9 and the Buzz control for maximum undistorted sound with MINIMUM buzz.
If the hiss disappears during adjusting, further reduce the signal strength.

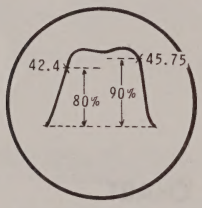


FIG. 1

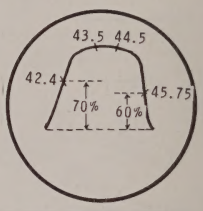


FIG. 2

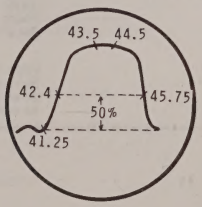
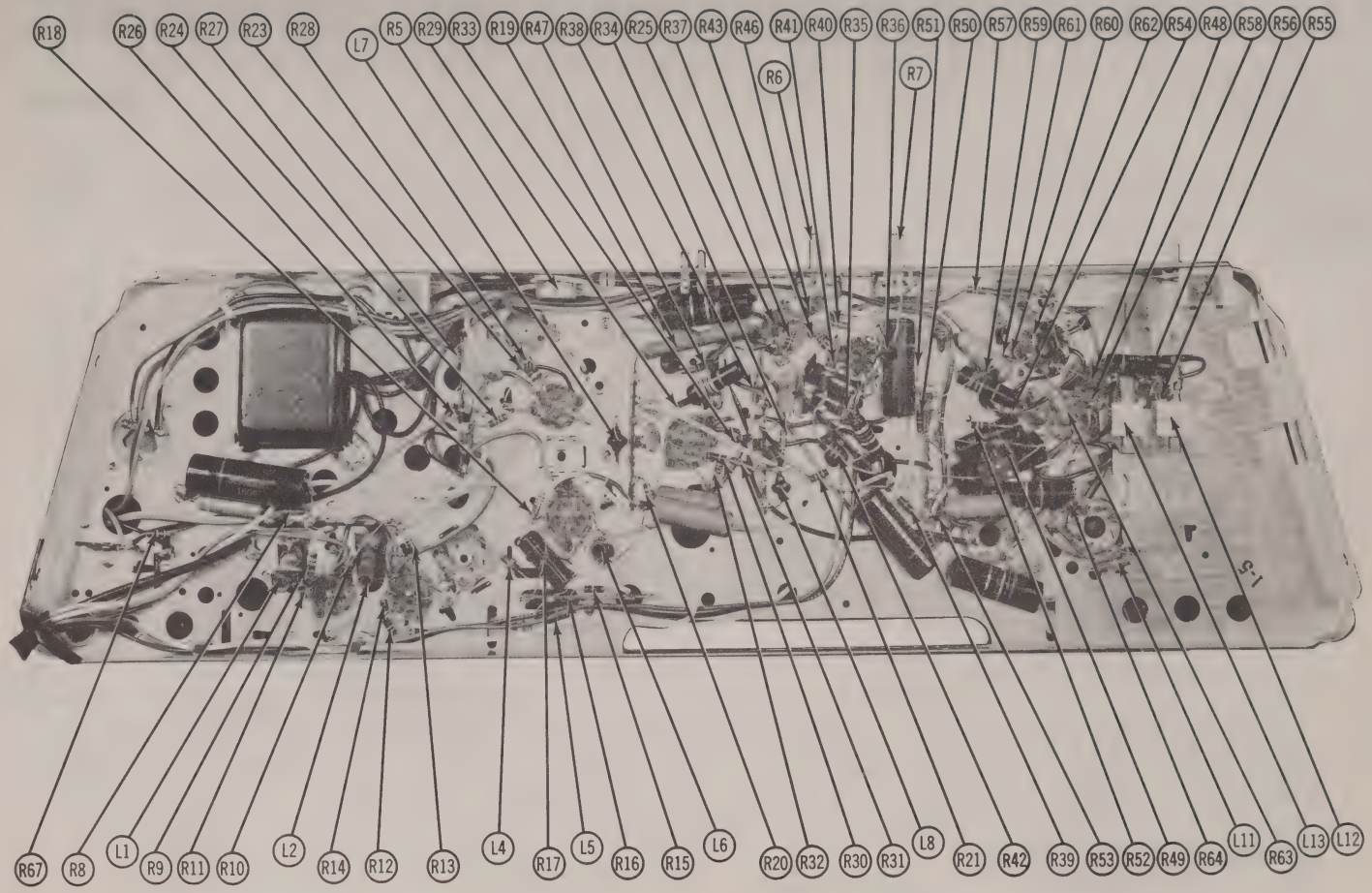
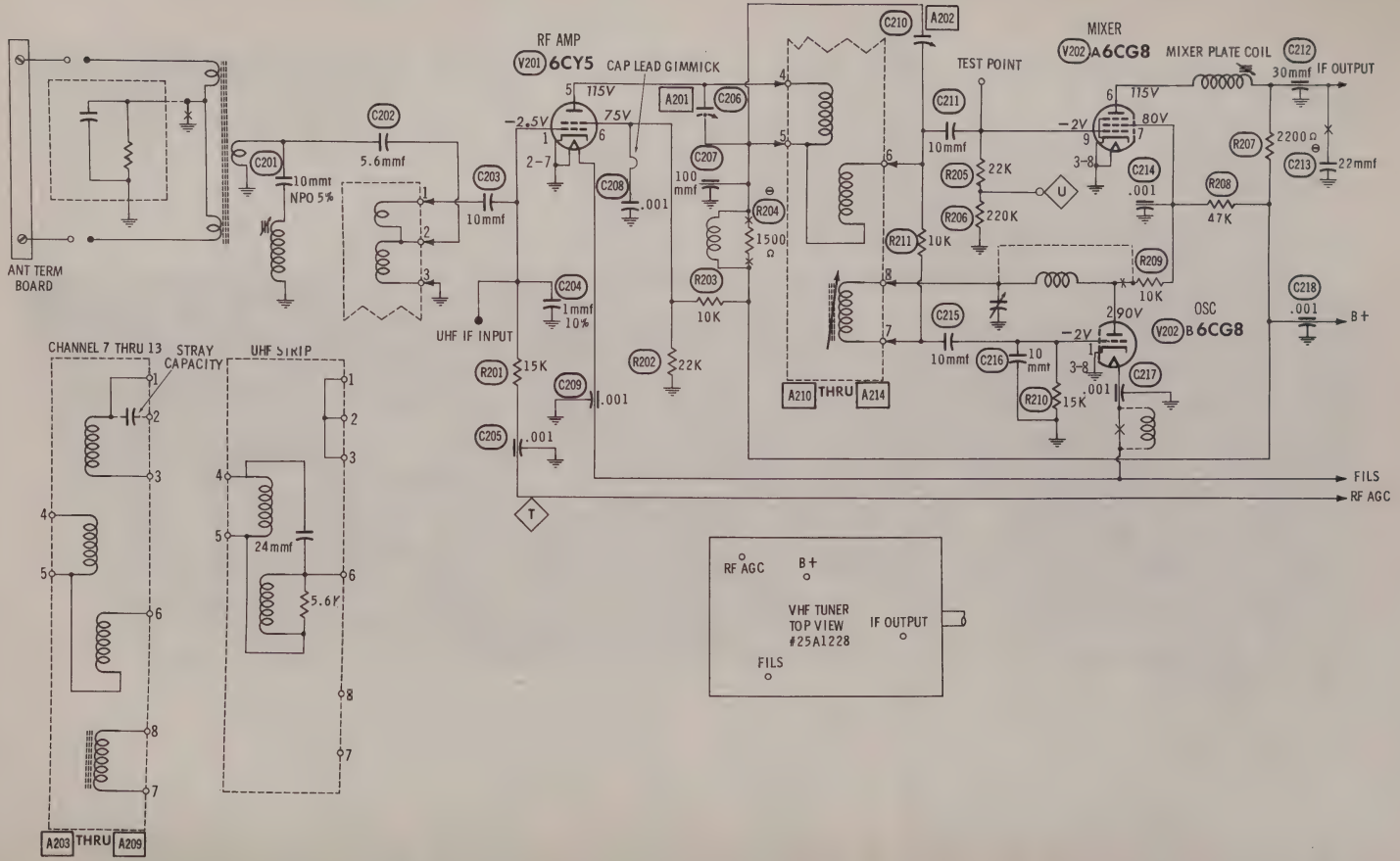


FIG. 3



TV CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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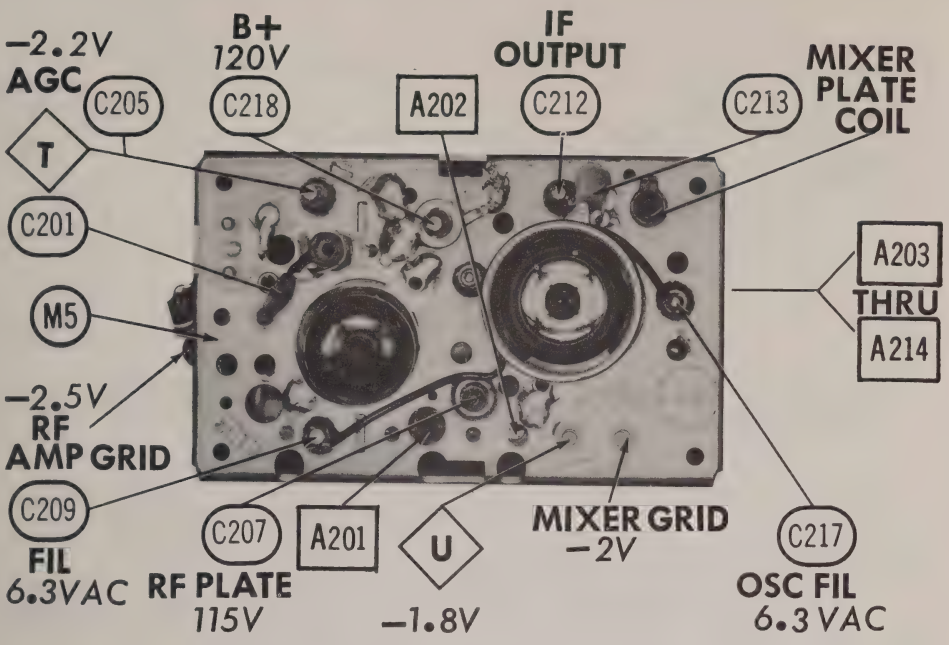
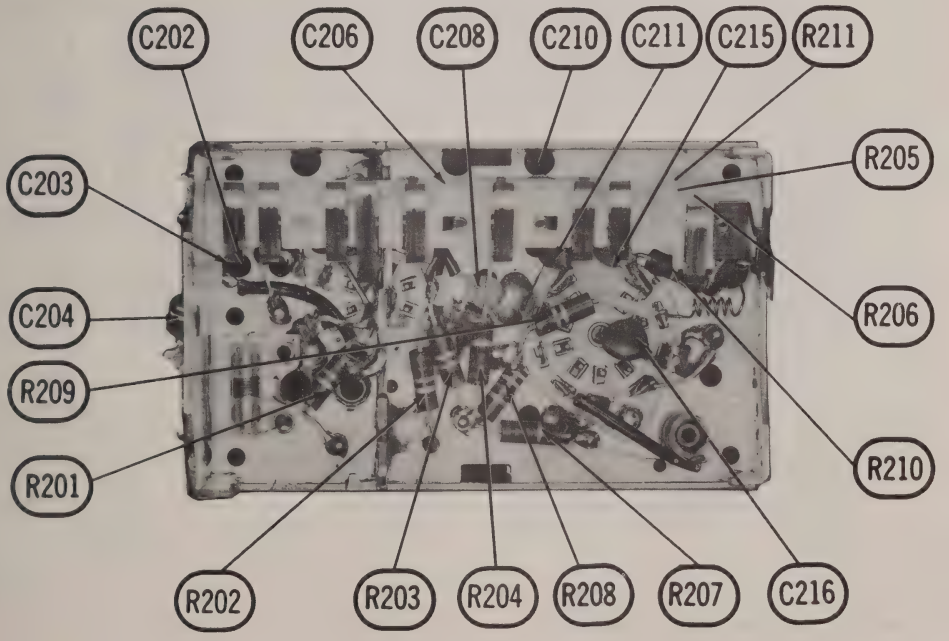
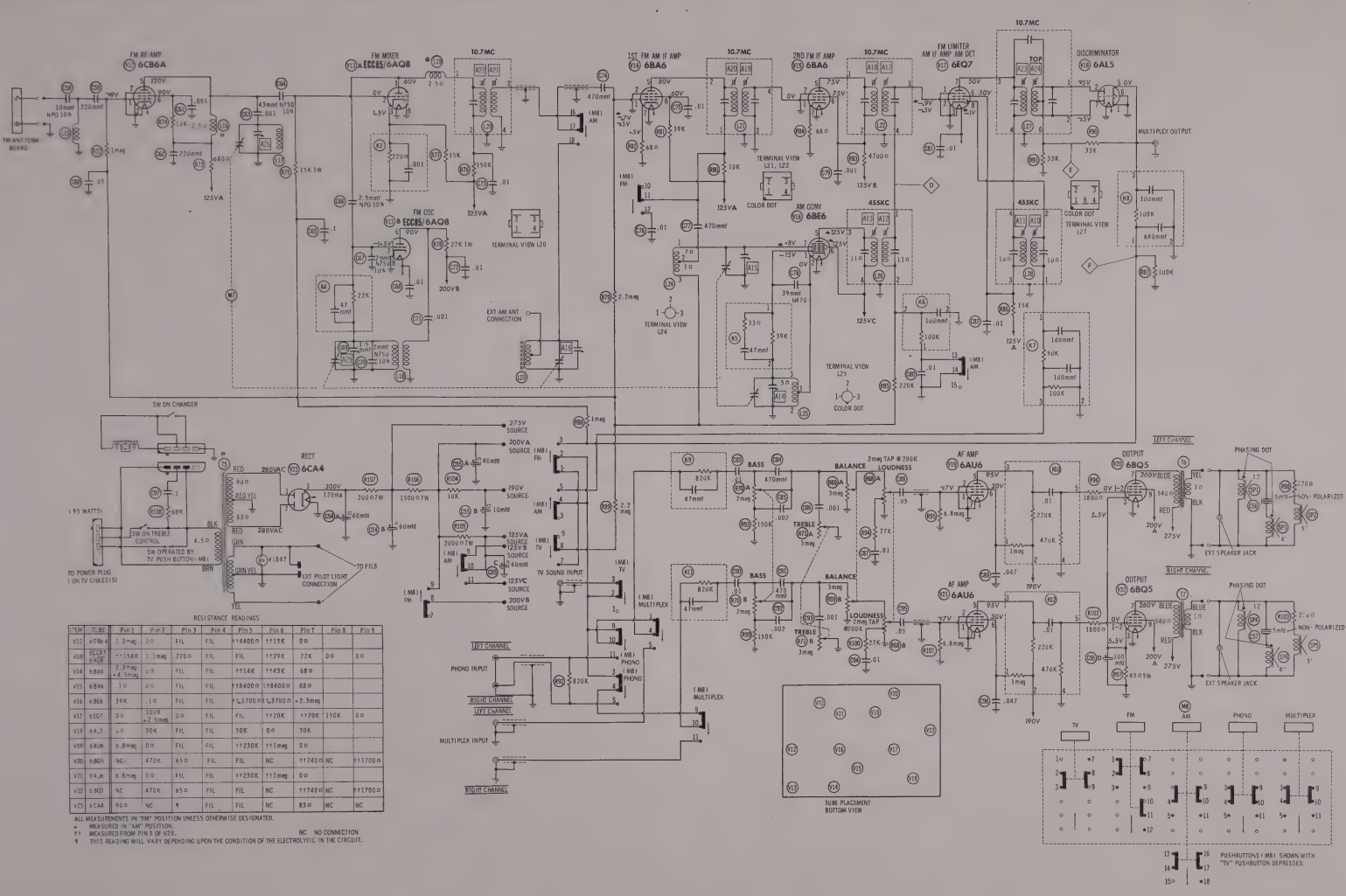
VHF TUNER 25A1228



VHF TUNER 25A1228 - TOP VIEW



VHF TUNER 25A1228 - BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V12	6CB6A	3.3meg	0Ω	FIL	FIL	††4400Ω	††15K	0Ω		
V13	ECC85 6AQ8	††154K	1.1meg	220Ω	FIL	FIL	††29K	22K	0Ω	0Ω
V14	6BA6	2.3meg *4.5meg	0Ω	FIL	FIL	††14K	††43K	68Ω		
V15	6BA6	1.0	0Ω	FIL	FIL	††84000Ω	††84000Ω	68Ω		
V16	6BE6	39K	1.0	FIL	FIL	†3700Ω	†3700Ω	*2.3meg		
V17	6EQ7	0Ω	100K *2.3meg	0Ω	FIL	FIL	††20K	††20K	150K	0Ω
V18	6AL5	∞	30K	FIL	FIL	50K	0Ω	30K		
V19	6AU6	6.8meg	0Ω	FIL	FIL	††230K	††1meg	0Ω		
V20	6BQ5	NC	470K	65Ω	FIL	FIL	NC	††7400Ω	NC	††1700Ω
V21	6AU6	6.8meg	0Ω	FIL	FIL	††230K	††1meg	0Ω		
V22	6BQ5	NC	470K	65Ω	FIL	FIL	NC	††7400Ω	NC	††1700Ω
V23	6CA4	900	NC	¶	FIL	FIL	NC	83Ω	NC	NC

ALL MEASUREMENTS IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "AM" POSITION.
†† MEASURED FROM PIN 3 OF V23.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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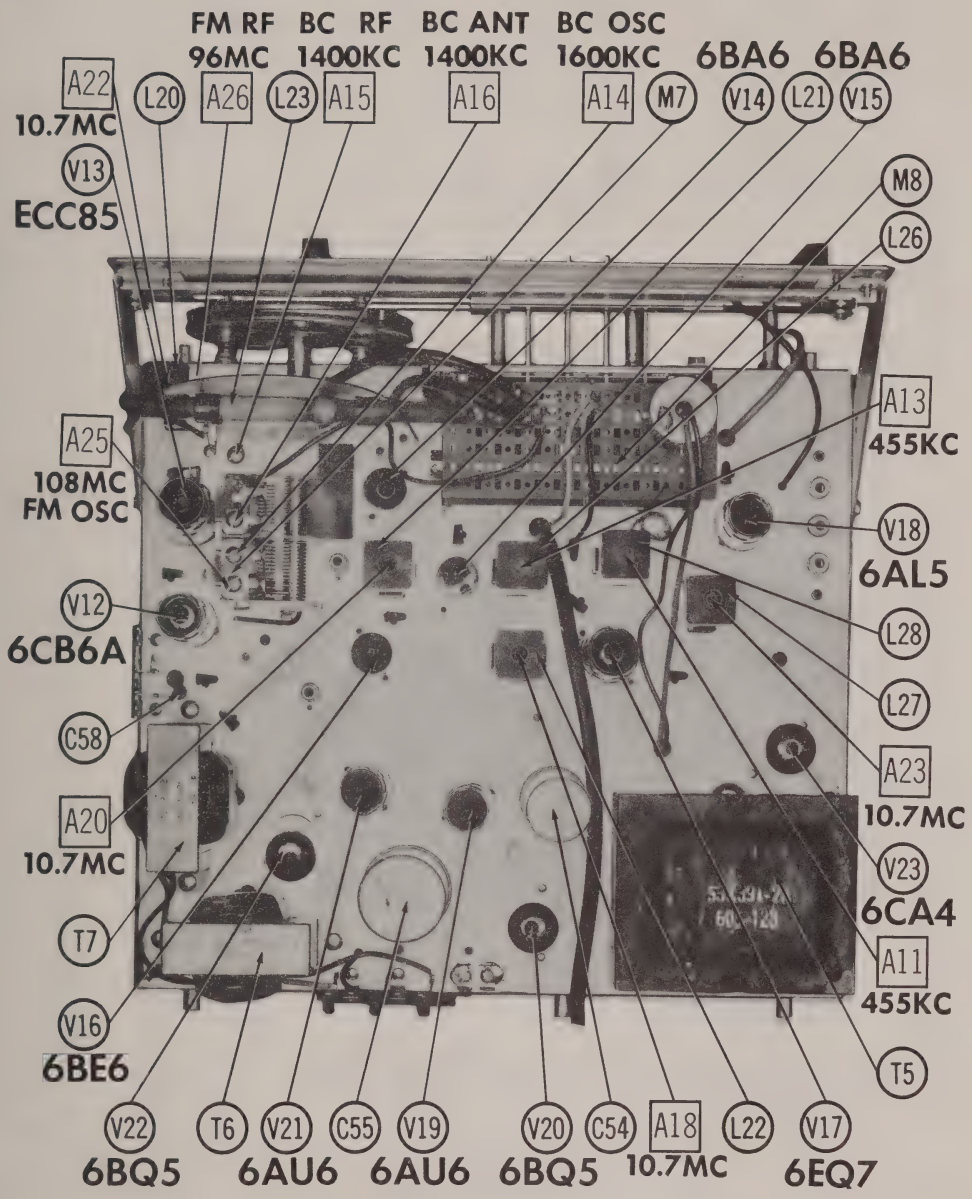
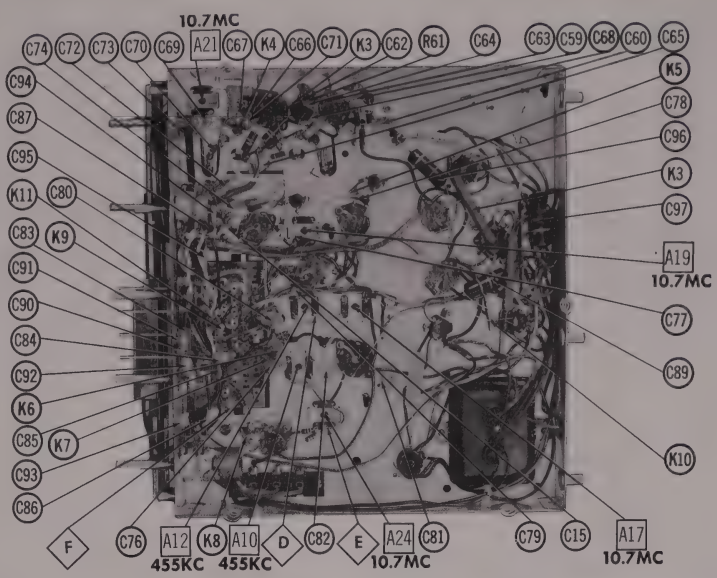
FM-AM RADIO

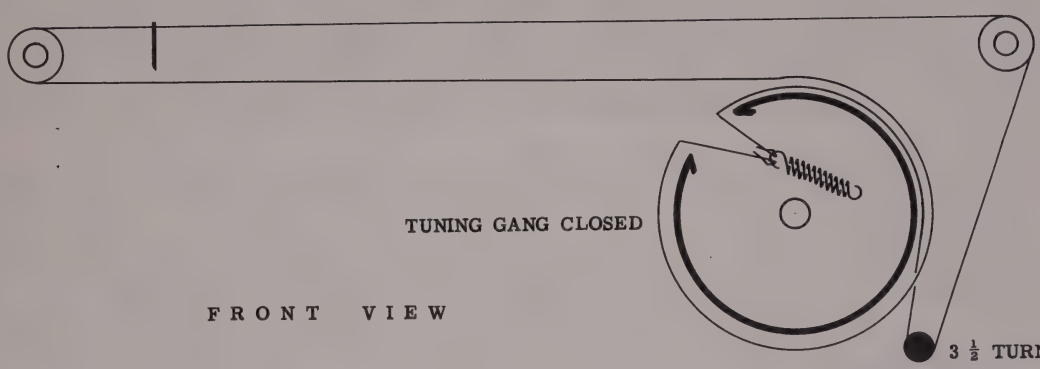


FM-AM RADIO - CHASSIS TOP VIEW

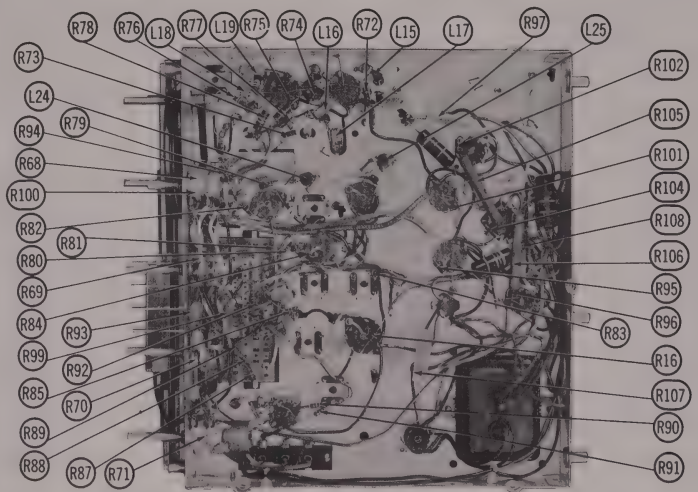
SET 569 FOLDER 1



FM-AM RADIO CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.



DIAL CORD STRINGING



FM-AM RADIO CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC)
V1	1st Video IF Amp.	6DK6
V2	2nd Video IF Amp.	6DK6
V3	Video Output	6BQ5
V4	Audio Detector	6BN6
V5	Sync Sep. - Sync Amp.	6CG7 (6FQ7) *

ITEM No.	USE	TYPE (• RAYTHEON • SYLVANIA •)
V6	Vert. Mult. - Vert. Output	6DE7
V7	Horiz. AFC - Horiz. Osc.	6CG7 (6FQ7) *
V8	Horiz. Output	6DQ6B
V9	Damper	6AX4GTA
V10	HV Rectifier	1K3

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V11	23AHP4	23AHP4 ①	23AHP4 ①		23AHP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	140	150	45X421	AFHS1-23	XA0261	XC1-16	WP125.5	TMS-1270	TVL-1428
C2A	▲125	300	45X431	AFH4-02-60	XC0733.2	XC4-14	FP330.24	TMQ-4146	*TVLS-3574.3
B	■20	300							
C	▲20	50							
C3A	▲125	300	45X467	AFH3-99-82	D0046	XC3-45	WP219	TMT-3310	TVL-3574.6
B	▲60	300							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C5	68	NPO	5%			DTZ-68	C10Q68C	*	CNQ-468	10TCC-Q68
C6	270		10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C7	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C9	390		10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C10	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C11	470		10%		DI -470	DD-472	5R5T47	CCD-471	GP347	10TS-T47
C12	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C14	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	30	N33	10%					*		
C16	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C17	.047	1000V			P1088N-047		CUB10S47	16DP-5-473	GEM-10147	10TM-S47
C18	3.3		10%		NPO-DI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C19	.005				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20A	.001				BPD-2X001	DD3-102	BYD6DD1	CCD-102	B2X210	5HK-2XD10
B	.001							CCD-102		
C21	15	N220	10%					*		10TCR-Q15
C22	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C23	.005				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C24	30	N33	10%					*		
C25	.005				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C27	.0047	400V			P488N-047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C28	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C29	.0047	400V	10%		V84C4D47-10%		PM6D47	6DP-1-472	GEM-6247	6TM-D47
C30	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C31	.033	200V	10%		V84C2S33-10%		PM6S33	4DP-2-333	GEM-1613	6TM-S33
C32	.033	600V			P688N-S33	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C33	.1	600V	10%		V84C6P1-10%		PM6P1	6DP-4-104	GEM-1001	6TM-P10
C34	18		10%		1469-000018	TCZ-18	22R5Q18	CM-19B-180K	CNO-418	MS-418
C35	82		10%		1469-000082	TCZ-82	22R5Q82	CM-19B-820K	CNO-482	MS-482
C36	100		10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C37	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	4TM-S47
C38	.022	200V			P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C39	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C40	220		10%		1469-00022	TCZ-220	22R5T22	CM-19B-221K	CNO-322	MS-322
C41	.01	400V			P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C42	820		10%		1469-00082		5R5T82	CM-19B-821K	MCB251	MS-382
C43	170-700			#17A276				469		
C44	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C45	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C46	.22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C47	56	5000V	10%	#47X755					6DY-456	
C48	39	5000V	10%	#47X756					6DY-439	
C49	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C50	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C51	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C52	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C53	.22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22

\# Airline Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Contrast	500Ω	40X501	B-415, or (AB-415, AK-7)		Q17-105, or (BU2, CF36, SS1, DC1) †	U52R
R2	Brightness	500K	40X498	B-59, or (AB-59, AK-7)	A47-500K-S/FS-3	Q11-133, or (BU2, CF16, SS1, DC1) †	U50

TV PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R3	Vert. Hold	300K	40X499	B-50, or (AB-50, AK-7)	A47-300K-S/ FS-3	Q11-131	U46
R4	Range (AGC)	7meg ①	40X500				
R5	Buzz	500Ω	40X472			110-500	PFL-500
R6	Vert. Linearity	1500Ω	40X484-2	TT-511	B47-1500-8	B11-109, TM4	PTA152L, or TA152L
R7	Height	5meg	40X491-1	TT-87, or B-87	B47-5meg-8	HLC-5	PTA561L, or TA561L

† "SNAPTROL" ① Open at "A" (low) end.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R8	2.2meg			
R9	10K			
R10	470Ω			
R11	56Ω			
R12	22K			
R13	470Ω			
R14	150Ω			
R15	1meg			
R16	5600Ω			
R17	1.8meg			
R18	330K			
R19	3600Ω 7W	PWT-3600	TW-SQ-3600	
R20	33K			
R21	180K			
R22	100K			
R23	680Ω			
R24	330K			
R25	22K			
R26	1meg			
R27	68K			
R28	4700Ω 1W			
R29	2.2meg			
R30	1.5meg			
R31	680K			
R32	47K			
R33	6800Ω			
R34	4700Ω			
R35	68K			
R36	1.5meg			
R37	15K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R38	15K			
R39	10meg			
R40	1.5meg			
R41	56K 1W			
R42	56K 1W			
R43	180Ω			
R44	560Ω			
R45	560Ω			
R46	10000Ω 1W			
R47	100K			
R48	220K			
R49	270K			
R50	820K			
R51	330K			
R52	82K			
R53	3900Ω			
R54	68K			
R55	22K			
R56	10K			
R57	220K			
R58	56K			
R59	1.8meg			
R60	22meg			
R61	1meg			
R62	68Ω			
R63	36K 2W			
R64	5600Ω			
R65	2500Ω 10W	PW10-2500	10W-SQ-2500	
R66	4.5Ω 5W	FR5.0	FZ4.7	Fusible
R67	470K			

* Alternate Value

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
X1	Sync Sep. Grid	150mmf, 270K	76X15	Aerovox PA-431 Centralab PC-80
X2	Vert. Integrator	.002mfd, 100K, 100K	76X19	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	9A2436	TV-156	6221 ▲	RTC-8552 ▲	TC250	▲ Disregard Secondary.
B	41.25MC Trap					T279	
L2	2nd Video IF	9A2444			RTC-9247	TG239	① Includes Complete
L3A	3rd Video IF	9A2435 ①			RTC-8593	T306	Assembly.
B	Peaking (30ch)		TV-180	6176	RTC-8593	T306	
L4	Peaking (30ch)	9A2375	TV-180	6178	RTC-8593	T306	
L5	Peaking (290ch)	36A22	TV-185	6155	RTC-8587	T318	
L6	4.5MC Trap	9A2366	TV-151	1383	RTC-8602	T249	
L7	Peaking (325ch)	36A27	TV-200	6132	RTC-8577	T319	
L8	Peaking (270ch)	36A45 ②	TV-185 ▲	6130 ▲	RTC-8576 ▲	T316 ▲	② Wound on 6800Ω
L9	Sound Takeoff	9A2434	TV-155	1470-A	RTC-8604	T247	Resistor.
L10	Quadrature	9A2367	TV-121	1480	RTC-8605	T251	▲ Shunt with 6800Ω
L11	RF Choke (1.5uh)	9A2380	BC-562	4604	RTC-8516	T858	Resistor.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	Workman TV PART No.	NOTES
L12	Horiz. Osc. (Horiz. Hold)	9A2481	TV-159	6212	RTC-8823	HS-7	WLC-25	T104	
L13	Horiz. Waveform	9A2372	MWC-12	6314	RTC-8828	HS-8	WLC-3	T110	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES	INDUCTANCE @ CURRENT 1000 ~(.)	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	NOTES
L14	.220A	40Ω	1Hy.	52X995-1	C-4084	C-2343	26C44	C-34X	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	NOTES
T1	117V ③ 1.2A	115V ③ 740A AC	6.3V ③ 7.4A	53X395A ①	P-4083			R-124BC	① Alternate Part #53X395

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	NOTES
T2	Vert. Output	51X307-1A	A-3885 *	VO-108 *	26S22 *	A-142X * ①	① Drill new mounting hole(s).
	Alt. Vert. Output	51X307					
T3	Yoke Horiz. 24MH (90°) Vert. 40MH	9A-2482-1A	MDF-125	DY-38A *	Y-45 * ②	Y-45 * & NW1	② Remove jumper from across yoke plug pins #7 & #8 and from across yoke terminals #6 & #3. Connect jumper across yoke plug pins #6 & #7.
	Alt. Yoke	9A2482				YC-112	
	Rear Cover and Centering Device						
	Yoke Clamp	30X611					
T4	Horiz. Output	53X399	HVO-174 *				

*COMPONENT CONNECTION DATA

ORIGINAL → / REPLACEMENT ↓	HV TRANSFORMER Original Connections 1 2 3 4 5 6	VERTICAL OUTPUT Original Connections			YOKE Original Connections 1 2 3 4 5 6 7 8	YOKE PLUG TO YOKE TERM 1 2 3 4 5 6 7 8
MERIT		Blue	Yel.	Red	7 3 2 4 5 6 1 8	4 7 3 2 - - - 6
STANCOR		Blue	Yel.	Red	3 7 1 6 5 4 2 8	6 3 2 1 - - - 4
THORDARSON		Blue	Red	Green	1 2 3 4 5 6 7 8	4 1 7 3 - - - 6
TRIAD	1 2 3 5	Blue	Red	Yel.		

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: AIRLINE PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.220A	66X23	1N1763	40H	
M2	.220A	66X23	1N1763	40H	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: AIRLINE PART No. FUSE	AIRLINE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	1¼"	length of #26 wire						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: AIRLINE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M4	1N60 or CK-706			1N60	Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M5	Tuner	25A1228	VHF Complete
	Tuner	25A1193-4	UHF
	Switch	2A523	UHF, Adapter
	Magnet	2A476	Beam Alignment (May be used in some versions)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	26AT12	Includes Gasket Assembly
Mask	4X1351-6	
Knob	26A771	Channel Selector Assembly
Knob	10A1029-2	Fine Tuning
Knob	10A1048-3	Brightness, Vert. Hold, Contrast, Range (AGC)
Knob	10A1018-1	Horiz. Hold
Extension Shaft	10A1019	Horiz. Hold
Compression Ring	20X1661	For Brightness, Vert. Hold, Contrast, Range (AGC) Knobs
Escutcheon	4X1651	TV Control Panel
Knob	10A1048-2	Tuning
Knob	10A1048-1	Loudness, Balance, Bass, Treble
Knob	10A1009	Pushbutton
Dial Glass	58X842	
Dial Pointer	15X294	
Escutcheon	4X1652	Control Panel

WIRING DATA

High Voltage Lead	Use BELDEN No. [illegible]
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 6 Conductor

FM–AM RADIO PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • TYPE
V12	FM RF Amplifier	6CB6A
V13	FM Mixer - Osc.	ECC85/6AQ8
V14	1st FM IF Amp. - AM RF Amp.	6BA8
V15	2nd FM IF Amp.	6BA6
V16	AM Converter	6BE6
V17	FM Lim. - AM IF Amp. - AM Detector	6EQ7

ITEM No.	USE	TYPE
V18	FM Discriminator	6AL5
V19	Left Channel AF Amp.	6AU6
V20	Left Channel Output	6BQ6
V21	Right Channel AF Amp.	6AU6
V22	Right Channel Output	6BQ6
V23	Rectifier	6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C54A	±40	350	45X474	AFH2-40-50	A40380	XC1-5	FF137.2	TMB-1640	TVL-1634
B	±50	350			BR6035	QT1-18	TC78	TD-40-350	TVA-1611
C55A	±40	350	45X475	AFH4-55-05	D0560	XC4-57	FF431.7	TMQ-4593	TVLH-4521.8 *
B	±10	350							
C	±40	350							
D	100	15							
C56	5	10 NP	45X426	FR57405	BBR4-150	NPQT-1	TCN105		TVANS-1110 *
C57	5	10 NP	45X426	FR57405	BBR4-150	NPQT-1	TCN105		TVANS-1110 *

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C58	10	NPO 10%		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C59	.220			DD-220	DD-221	L10722	CCD-221	B-322	10TS-T22
C60	.05			BPD-05	DD-503	CUB685	6DP-3-503	GP150	5HK-S50
C61	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C62	.220			DD-221	DD-225	L10722	CCD-221	B-220	10TS-T22
C63	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-102	5HK-D10
C64	43	N750 10%		N750-DI 39	TCN-43	C10Q43C	CCTN-390	CNT-439	10TCU-Q43
C65	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	47M-P10
C66	2.5	NPO 10%	#47X638						10TCC-V27
C67	3	N750 10%	#47X628					CN7-522	10TCU-V22
C68	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C69	1-5		#67A274		829-6		CV-3		
C70	2	N750 5%	#47X628					CN7-522	10TCU-V22
C71	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C72	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C73	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C74	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C75	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C76	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C77	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C78	39	N470	(22) †						
C79	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C80	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C81	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C82	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C83	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C84	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C85	.002			BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C86	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C87	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C88	.05			BPD-05	DD-503	CUB685	6DP-3-503	GP150	5HK-S50
C89	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C90	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C91	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C92	.002			BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C93	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C94	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C95	.05			BPD-05	DD-503	CUB685	6DP-3-503	GP150	5HK-S50
C96	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C97	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	47M-P10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
# Airline Part Number. † Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K3	FM Mixer Cathode	.001mfd, 220Ω	76X24	
K4	FM Osc. Grid	47mmf, 22K	76X38	
K5	AM Converter Grid	47mmf, 33Ω, 39K	76X20	
K6	1st AM IF Secondary	100mmf, 100K	76X40	
K7	AM Diode Filter	100mmf, 100mmf, 50K, 100K	76X41	
K8	FM Audio Filter	100mmf, 980mmf, 100K	76X25	
K9	Left Channel Input	47mmf, 820K	76X39	
K10	Left Channel Audio Coupling	.01mfd, 220K, 470K, 1meg	76X42	
K11	Right Channel Input	47mmf, 820K	76X39	
K12	Right Channel Audio Coupling	.01mfd, 220K, 470K, 1meg	76X42	

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R68A	Loudness, Left Channel	2meg ①	36X434	BT-174, STR-174, or (ABT-174, STR-174, AK-7)			
B	Loudness, Right Channel	2meg ①					
R69A	Balance, Left Channel	3meg	36X435				
B	Balance, Right Channel	3meg					
R70A	Bass, Left Channel	2meg	40X519	B-76, SR-76 or (AB-76, SR-76, AK-7)	AD47-2meg-Z/ FS-3		FB26A, RU26A, C33500
B	Bass, Right Channel	2meg					
R71A	Treble, Left Channel	3meg	40X523				
B	Treble, Right Channel (Push-Pull Off-On Sw.)	3meg					

① Tap ② 200K.

AIRLINE MODELS WG-6050A/ 51A/52A, WG-6150A/51A/52A

FOLDER 1

FM—AM RADIO PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R72	1meg				R91	33K			
R73	680Ω				R92	820K			
R74	10K				R93	150K			
R75	15K 1W				R94	27K			
R76	150K				R95	6.8meg			
R77	15K				R96	1800Ω			
R78	27K 1W				R97	65Ω 5W	PW5-65	5W-SQ-65	
R79	2.2meg				R98	220Ω			
R80	10K				R99	150K			
R81	39K				R100	27K			
R82	68Ω				R101	6.8meg			
R83	4700Ω				R102	1800Ω			
R84	68Ω				R103	220Ω			
R85	220K				R104	10K			
R86	15K				R105	2000Ω 7W	PW7-2000	7W-SQ-2000	
R87	100K				R106	1500Ω 7W	PW7-1500	7W-SQ-1500	
R88	1meg				R107	200Ω 7W	PW7-200	7W-SQ-200	
R89	2.2meg				R108	68K			
R90	33K								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L15	FM Ant.	9A2448					
L16	RF Choke (3.3uh)	35A8 ①	BC-564	4608	RTC-8518	T858	① IRC Type #CLA.
L17	FM RF	S-38A2113					
L18	FM Osc.	S-38A2114					
L19	RF Choke (3.3uh)	35A8 ①	BC-564	4608	RTC-8518	T858	
L20	1st FM IF	9A2493	FM-254	1463	RTC-8599	T633	
L21	2nd FM IF	9A2492	FM-254	1463	RTC-8599	T633	
L22	3rd FM IF	9A2492	FM-254	1463	RTC-8599	T633	
L23	Loopstick	9A2496	BC-419	705-A		T532	
L24	AM RF	9A2494					
L25	AM Osc.	9A2495	BC-393	70-OSC	RTC-8647	T512	
L26	1st AM IF	9A2469	BC-352	12-C1	RTC-8632	T607	
L27	Discriminator	9A2450	FM-253	1464	RTC-8665	T634	
L28	2nd AM IF	9A2491	BC-353	12-C2	RTC-8633	T608	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	117V @ .85A	560VCT @ .120A DC	12.6VCT @ 2.8A	53X391-2A ①					① Alternate Part #53X391-2

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	4100Ω	3-4Ω	51X220-3	A-2935	A-3825	24S63	S-5X	
T7	4100Ω	3-4Ω	51X220-2	A-2935	A-3825	24S63	S-5X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	12A562 ①	12A6PA	① Part #12A597 used in Late Production Models.
SP2	5"	PM	6-8Ω	12A592 ②	5A1Z6.4	② Part #12A593 used in Late Production Models.
SP3	4"	PM	3-4Ω	12A595	4A05	
SP4	12"	PM	6-8Ω	12A562 ①	12A6PA	
SP5	5"	PM	6-8Ω	12A592 ②	5A1Z6.4	
SP6	4"	PM	3-4Ω	12A595	4A05	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	AIRLINE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M6			17D	N-41SD*	26S	2604D * 2605 *	9TA4-SD	N-9TA-SD *	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M7	Tuning Cap.	14A244	FM-AM 4 Gang (AM Section: Ant. 13-332mmf, RF 12-217mmf, Osc. 10-143mmf)
M8	Switch	2A545	Function Selector, Pushbutton Type

AM-FM RADIO ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:
A10 thru A13 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A14, A15, A16, A25, A26 .. GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A17 thru A24 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ 30% AM).	(AM) Tuning gang fully open	Across voice coil	A10, A11, A12, A13	Adjust for maximum output.
2.	High side thru 470Ω to external AM antenna terminals. Low side to chassis.	1600KC	1600KC	"	A14	"
3.	"	1400KC	1400KC	"	A15, A16	Adjust for maximum output while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓓ. Common to chassis.	A17, A18, A19, A20, A21, A22	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓔ. Common to chassis.	A23	"
6.	"	"	"	DC probe to point Ⓕ. Common to chassis.	A24	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference	Vert. Amp. to point Ⓓ. Low side to chassis.	A17, A18, A19, A20, A21, A22	Adjust for maximum gain and symmetry of response similar to Fig. 4 with markers as shown.
5.	"	"	"	Vert. Amp. thru 47K to point Ⓔ. Low side to chassis.	A23	"
6.	"	"	"	Vert. Amp. to point Ⓕ. Low side to chassis.	A24	Adjust to place marker at the center of crossover lines similar to Fig. 5. SLIGHTLY retouch A23 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓓ. Common to chassis.	A25	Adjust for maximum deflection.
8.	"	96MC	96MC	"	A26	"

FIG. 4

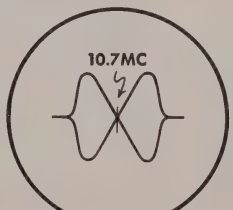


FIG. 5

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201, A202 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A203 thru A214 ... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 4.5 volt bias supply to point Ⓣ. Positive to chassis.
Use 10MC sweep unless otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	207MC	205.25MC 209.75MC	12	Vert. Amp. thru 10K to point Ⓓ. Low side to chassis.	A201, A202	Adjust for response curve similar to Fig. 201 with markers above 90%.
2.	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustments of A201 and A202 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
		201MC	199.25MC 203.75MC	11			
		195MC	193.25MC 197.75MC	10			
		189MC	187.25MC 191.75MC	9			
		183MC	181.25MC 185.75MC	8			
		177MC	175.25MC 179.75MC	7			
		85MC	83.25MC 87.75MC	6			
		79MC	77.25MC 81.75MC	5			
		69MC	67.25MC 71.75MC	4			
		63MC	61.25MC 65.75MC	3			
		57MC	55.25MC 59.75MC	2			

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Detector load.	A203	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A204	
		201MC	199.25MC 203.75MC	11		A205	
		195MC	193.25MC 197.75MC	10		A206	
		189MC	187.25MC 191.75MC	9		A207	
		183MC	181.25MC 185.75MC	8		A208	
		177MC	175.25MC 179.75MC	7		A209	
		85MC	83.25MC 87.75MC	6		A210	
		79MC	77.25MC 81.75MC	5		A211	
		69MC	67.25MC 71.75MC	4		A212	
		63MC	61.25MC 65.75MC	3		A213	
		57MC	55.25MC 59.75MC	2		A214	

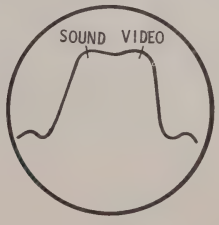


FIG. 201

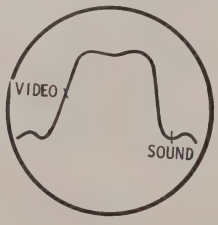


FIG. 202

VHF TUNER PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆		RAYTHEON ◆ SYLVANIA ◆			
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10 NPO 5%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	5.6	#2101-569						10TCC-V56
C203	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C204	1 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C205	.001		EF-001	MFT-1000		CCF-102	CT280A	
C206								
C207	100		EF-0001	MFT-100				
C208	.001		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C209	.001		EF-001	MFT-1000		CCF-102	CT280A	
C210								
C211	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C212	30	(25) †						
C213	22	Note 1	NPO-DI 22	DTZ-22	C10Q22C	CCTO-220	CNO-422	10TCC-Q22
C214	.001		EF-001	MFT-1000		CCF-102	CT280A	
C215	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C216	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCU-Q10
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	
C218	.001		EF-001	MFT-1000		CCF-102	CT280A	

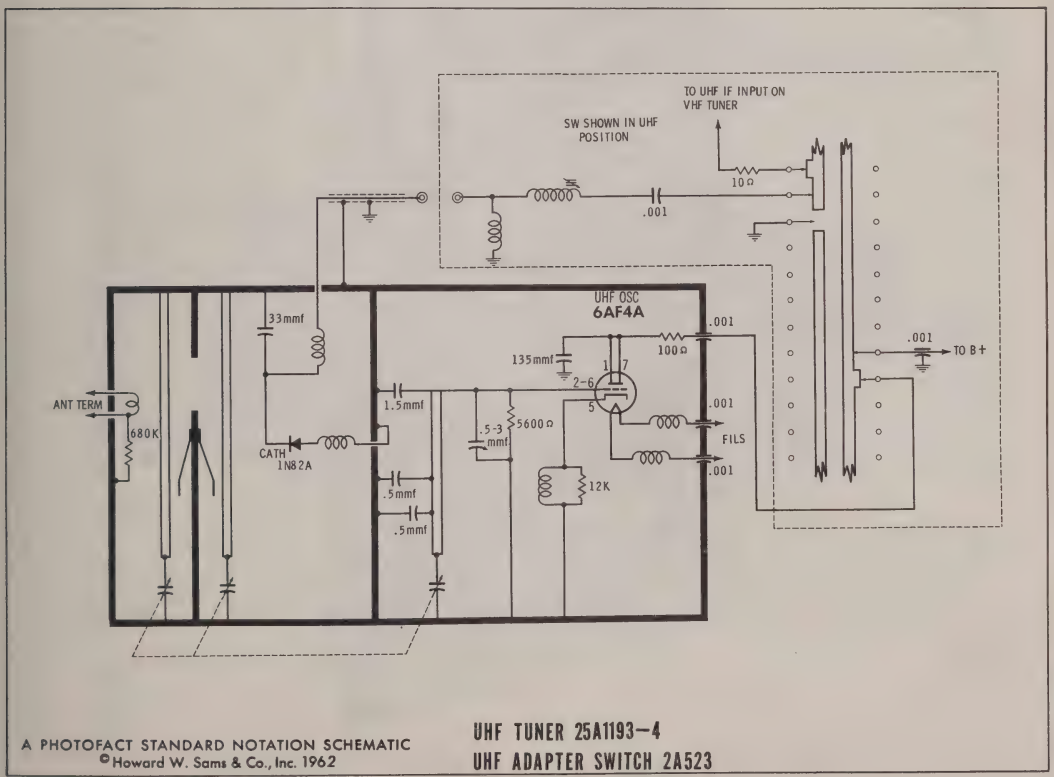
Sarkes Tarzian Part Number. † Alternate Value (Sarkes Tarzian Pt. #267-250).
Note 1. May not be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	15K				R207	2200Ω			
R202	22K				R208	47K			
R203	10K				R209	10K			
R204	1500Ω			Note 1	R210	15K			
R205	22K				R211	10K			
R206	220K								

Note 1. May not be used in some versions.



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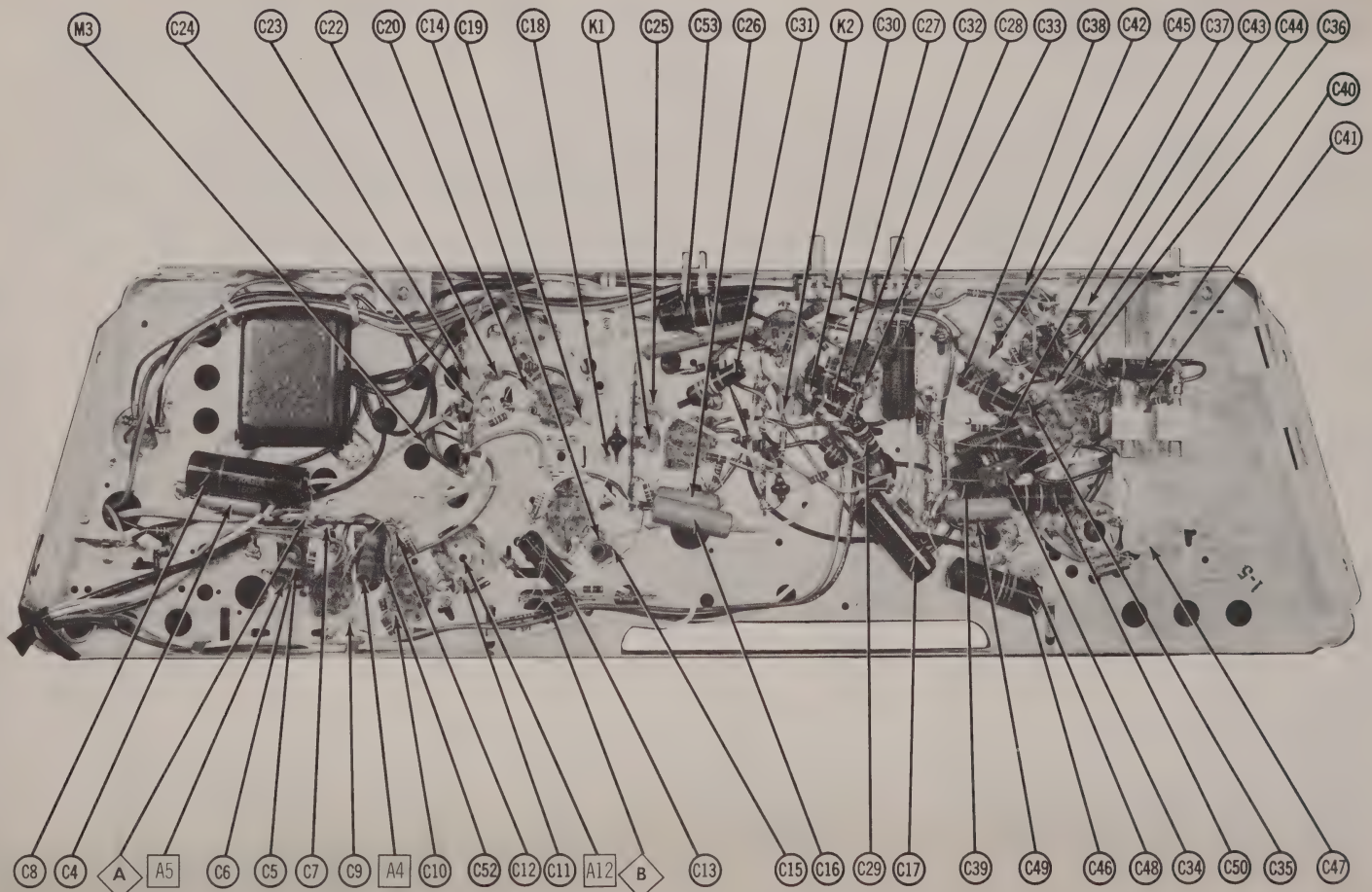
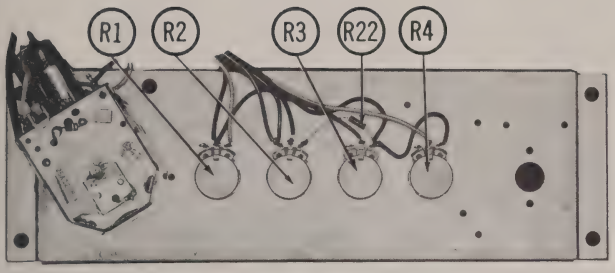
UHF TUNER 25A1193-4
UHF ADAPTER SWITCH 2A523



TV CHASSIS BOTTOM VIEW - ALIGNMENT, CAPACITOR, MISC. IDENT.



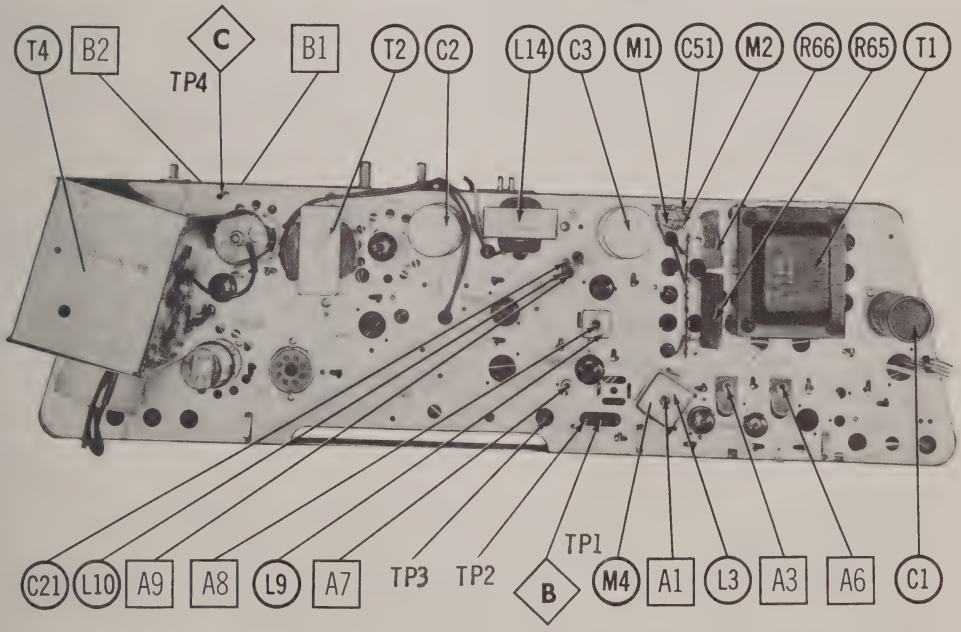
TEST POINTS

TP1 -.2V
VIDEO DET. OUTPUT

TP2 -.2V
VIDEO DET. LOAD

TP3 -.9V
IF AGC

TP4 225V
HORIZ. WAVEFORM



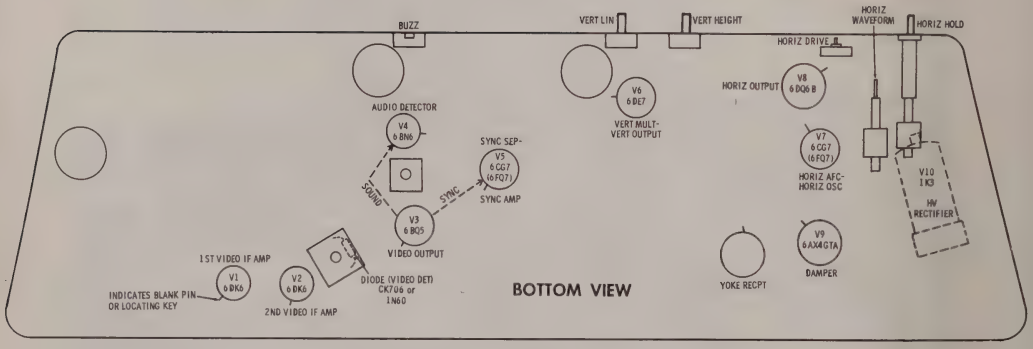
TV CONTROL PANEL, TV CHASSIS - TOP VIEW

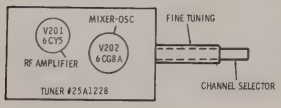
TV RESISTANCE MEASUREMENTS

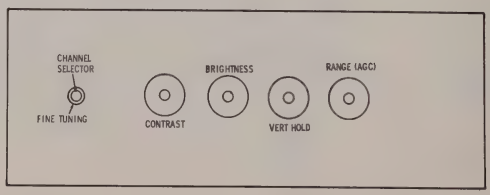
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6DK6	900K	56Ω	FIL	FIL	†3000Ω	†3000Ω	0Ω		
V2	6DK6	.1Ω	150Ω	FIL	FIL	†3000Ω	†3000Ω	0Ω		
V3	6BQ5	NC	310K	●20Ω	FIL	FIL	NC	†3600Ω	NC	†2500Ω
V4	6BN6	●350Ω	6Ω	FIL	FIL	†7200Ω	6Ω	†350K		
V5	6CG7	†1.5meg	2.2meg	0Ω	FIL	FIL	†14K	47K	0Ω	0Ω
V6	6DE7	†360Ω	NC	1.5meg	FIL	FIL	●†3meg	●140K	0Ω	●2000Ω
V7	6CG7	†56K	400K	0Ω	FIL	FIL	†40Ω	1.4meg	410K	0Ω
V8	6DQ6B	TP	FIL	TP	†36K	850K	TP	FIL	0Ω	TOP CAP †9Ω
V9	6AX4GTA	TP	NC	¶300K	NC	†40Ω	TP	FIL	FIL	
V10	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †495Ω
V11	23AHP4	FIL	30K	Pin 6 †100K	Pin 10 †10meg	Pin 11 ●350K	Pin 12 FIL			
V201	6CY5	●1.5meg	0Ω	FIL	FIL	†4000Ω	†10K	0Ω		
V202	6CG8A	15K	†12K	0Ω	FIL	FIL	†4700Ω	†18K	0Ω	240K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V9.

NC NO CONNECTION
TP TIE POINT

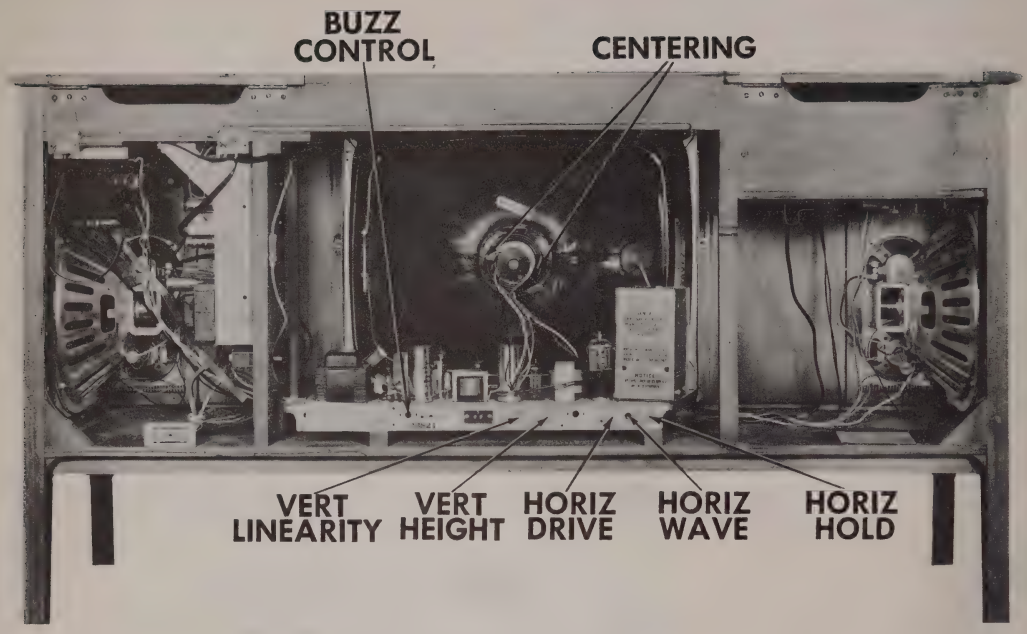






V11 23AHP4 PICTURE TUBE YOKE

TV
TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Adjust the Horizontal Hold (Freq. Slug) until the picture synchronizes horizontally.

Turn the Contrast fully counterclockwise and the Brightness clockwise so that the picture appears to be washed out.

Turn the Horizontal Drive Trimmer (B1) clockwise until white vertical bars (drive lines) appear in the left center portion of the raster, then counterclockwise until the white vertical bars disappear.

Connect the vertical amplifier of the scope thru a low capacity probe to point ⏚. Low side to chassis.

Adjust the Horizontal Waveform Slug (B2) until the round and sharp peaks of the waveform are equal in amplitude. See Figure 6. Keep the picture in sync during this adjustment with the Horizontal Hold.

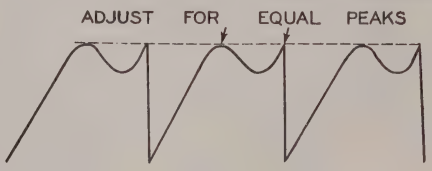


FIG. 6

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL

1. Remove 5 push-on type knobs from top.
2. Remove 21 screws holding rear cover.
3. Remove 4 chassis bolts from bottom and remove 4 screws holding tuner bracket.
4. Disconnect antenna leads from tuner and grounding strap to chassis.
5. Disconnect yoke plug, picture tube socket, and hi voltage lead.
6. Disconnect audio and power plug between TV and radio chassis.
7. Remove TV chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the TV chassis for picture tube removal.

PHOTOFACT® Folder

ZENITH CHASSIS 16H20, 16H20Q, 16H20U

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH CHASSIS 16H20, 16H20Q, 16H20U

MODEL H2212F

ZENITH CHASSIS 16H20, 16H20Q, 16H20U

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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DATE 3–62 SET 569 FOLDER 2

PHOTOFACT® Folder

ZENITH CHASSIS 16H20, 16H20Q, 16H20U

ZENITH CHASSIS 16H20, 16H20Q, 16H20U

MODEL H2212F

TRADE NAME	ZENITH MODELS	TV Chassis	Remote Control Receiver	VHF Tuner	UHF Tuner
	H1925C/L, H2101C/F, H2102R/W, H2103L	16H20		175-202	
	H1925CU/LU, H2101CU/FU, H2102RU/WU, H2103LU	16H20U		175-201	175-8
	H2211C, H2212G/F	16H20Q	S-53203	175-404	
	H2213G	16H20Q	S-53203	175-310	

MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Television Receiver (16H20Q Chassis with Remote Control)
TUBES	TV: VHF - Sixteen, UHF - Seventeen Remote Control Receiver: Six
POWER SUPPLY	110-120 Volts AC, 60 Cycle
RATING	VHF TV: 165 Watts, 1.45 Amp. @ 117 Volts AC VHF TV & Remote Control Receiver: 195 Watts, 1.7 Amp. @ 117 Volts AC (230 Watts, 2.1 Amp., While Tuning)
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Pry out mask (bottom edge) and lift up. Remove 4 clamps (1 in each corner) holding safety glass.

FUSE — LOCATION

TV: 5A (Line) — See "Tube Placement Chart"
7/10A (LV Supply) — See "Tube Placement Chart"
#24 Fuse Wire (Fil.) — See M3 in photo, TV Chassis - Bottom View

Remote Control Receiver: 3/4A (LV Supply) See M11 in photo, Receiver - Top View

VHF TUNER OSCILLATOR ADJUSTMENTS

Tuner 175-310: Oscillator adjustments made by fine tuning.

Tuners 175-201, -202: Set fine tuning to center of its range. Oscillator adjustment screws are located at front of tuner (1 for each channel).

Tuner 175-404: Tuner has 1 oscillator adjustment for each channel. When tuning with front tuning knob, shaft mechanically engages tuner oscillator slug on channel in use.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus Control. (See "Tube Placement Chart" for location.)

SYNC STABILITY

Sync stability may be varied by means of a Fringe Lock. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Osc. Coil Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of LA321

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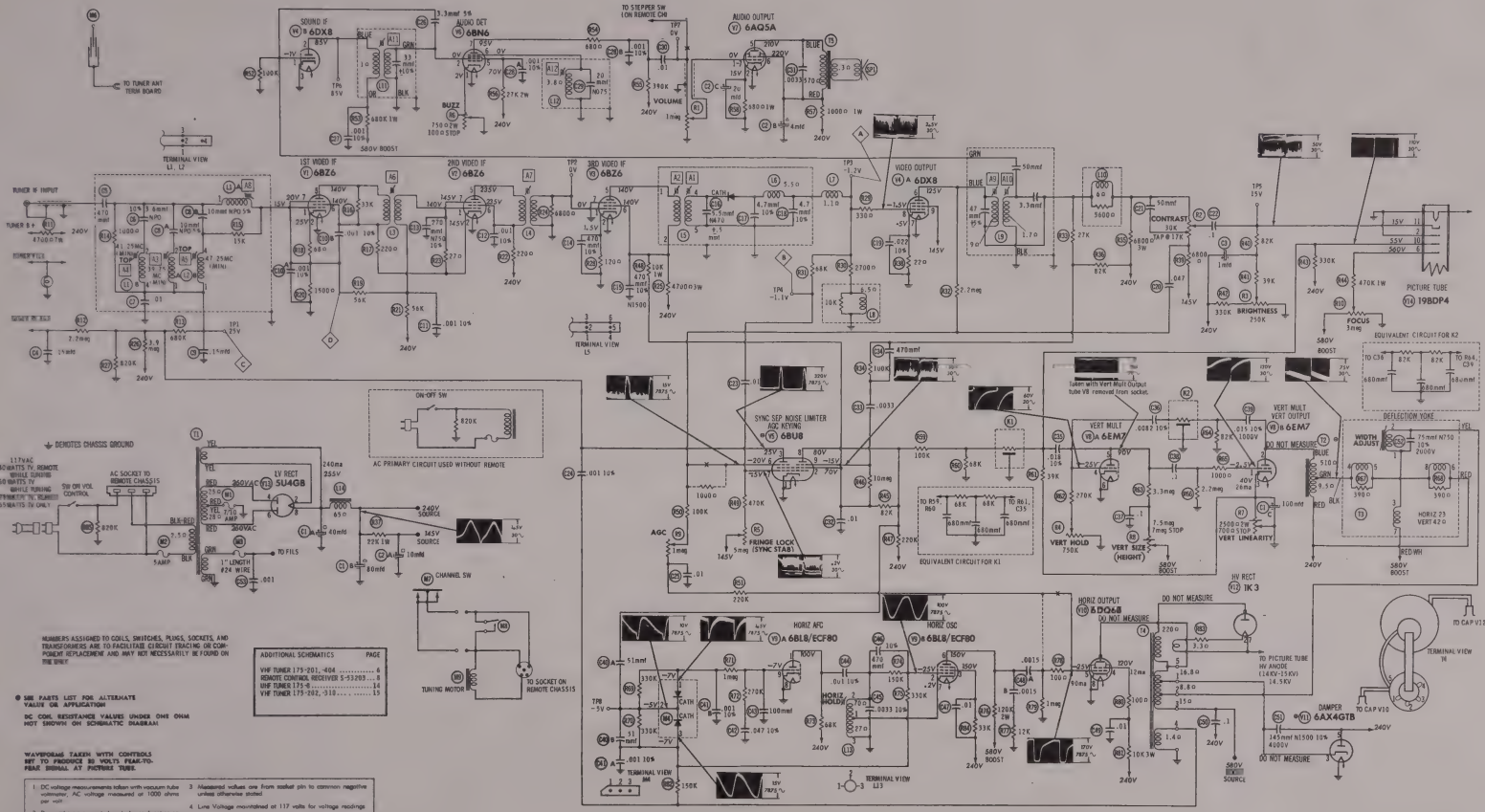
SET 569 FOLDER 2



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE BOARD.

ADDITIONAL SCHEMATICS — PAGE

VHF TUNER 175-201, -404 6
REMOTE CONTROL RECEIVER 5-53203 8
UHF TUNER 175-4 14
VHF TUNER 175-202, -310 15

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER OHMS OHM NOT SHOWN ON SCHEMATIC DIAGRAM

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.

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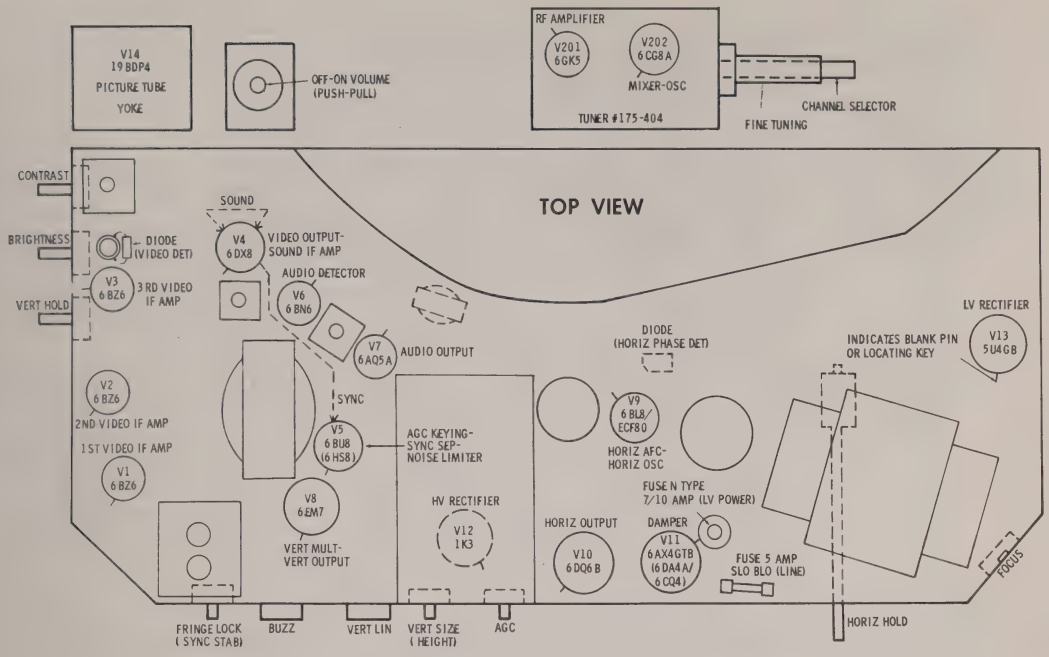
ZENITH CHASSIS 16H20, 16H20Q, 16H20U

TV TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), Fuse (LV Power), V13

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, V13
Vert. off freq. V8
Horiz. off freq. Diode (Horiz. Phase Det.), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

ALIGNMENT INSTRUCTIONS

TV

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470mmf	High side to TP-2. Low side to chassis.	44.0MC (10MC Swp.)	39.75MC 41.25MC 45.75MC	Between two channels	Vert. Amp. thru 10K to point (A). Low side to chassis. (Across Video Detector load).	A1, A2	Set sweep output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. If the desired response cannot be obtained, see that the cores are entering their respective windings from opposite ends.
2.	Direct	High side to ungrounded tube shield over Mixer-Osc. (V202). Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5	Connect a clip lead from point (B) to chassis. Connect a clip lead from point (C) to point (D). Use high scope gain and adjust A3 thru A5 for MINIMUM amplitudes at markers as shown in Fig. 2. A3 controls 39.75MC, A4 controls 41.25MC and A5 controls 47.25MC.
3.	"	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A6, A7, A8, & Mixer Plate Coil	Disconnect the clip lead from point (D) and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A6 affects the low frequency side and A7 affects the high frequency side.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver terminals.
Tune in a TV station and adjust the attenuator until the signal is below the limiting level of the Audio Detector as evidenced by a hiss similar to super-regeneration in the sound. Adjust A9, A10, A11 and A12 for maximum sound and best quality. Adjust the Buzz control for MINIMUM buzz.
If the hiss disappears during alignment, further reduce the signal until the hiss returns.

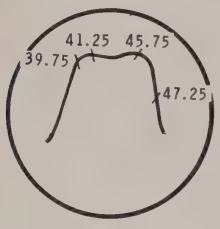


FIG. 1

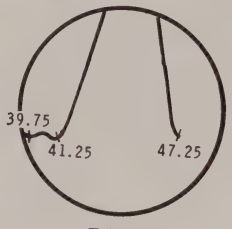


FIG. 2

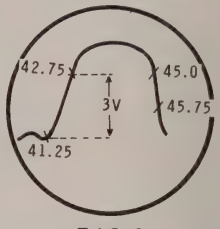
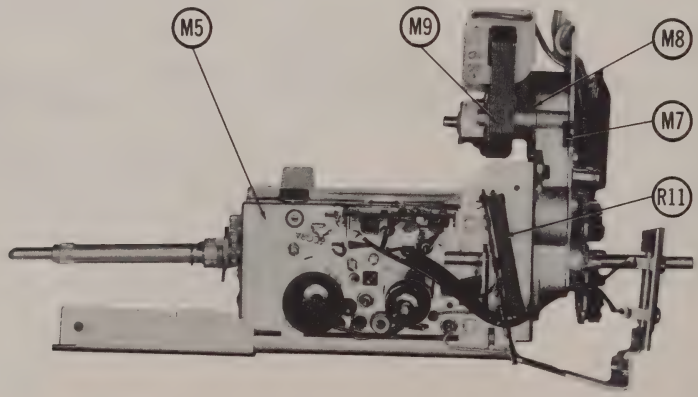
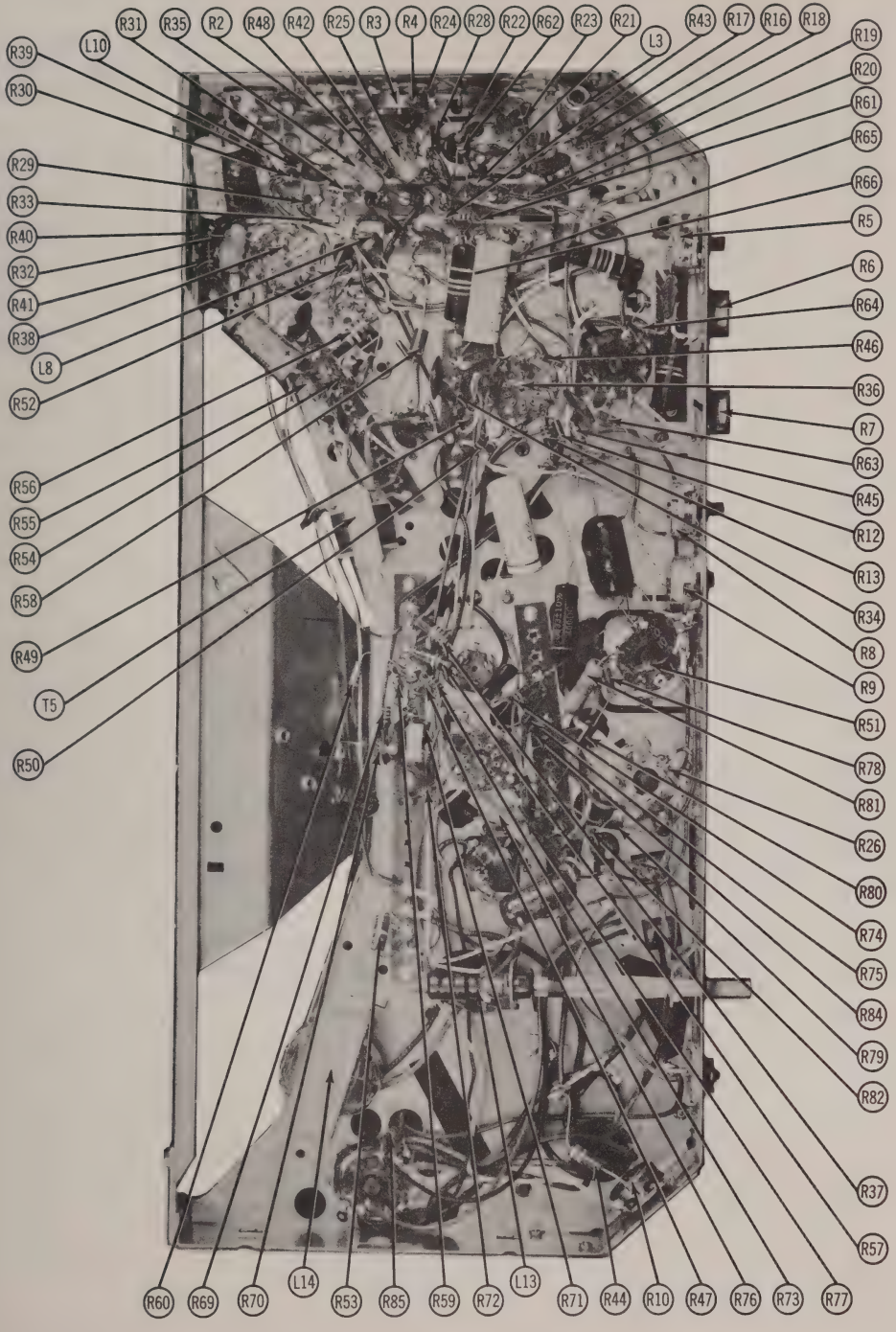


FIG. 3

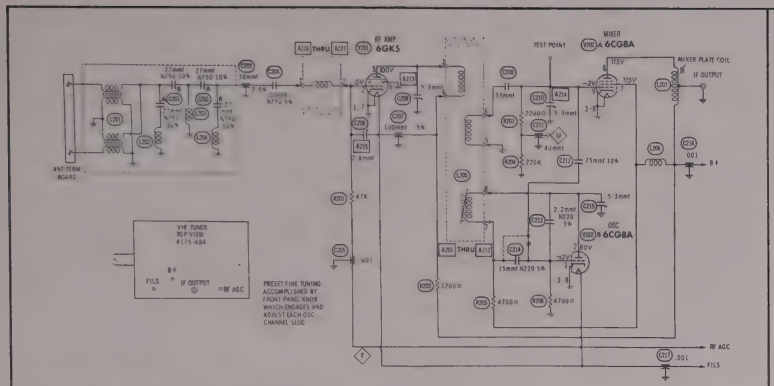


VHF TUNER, POWER TUNING ASSEMBLY



TV CHASSIS BOTTOM VIEW -
RESISTOR, INDUCTOR, TRANSFORMER IDENT.

SET 569 FOLDER 2



TUNER 175-404 PHOTOS PAGE 17

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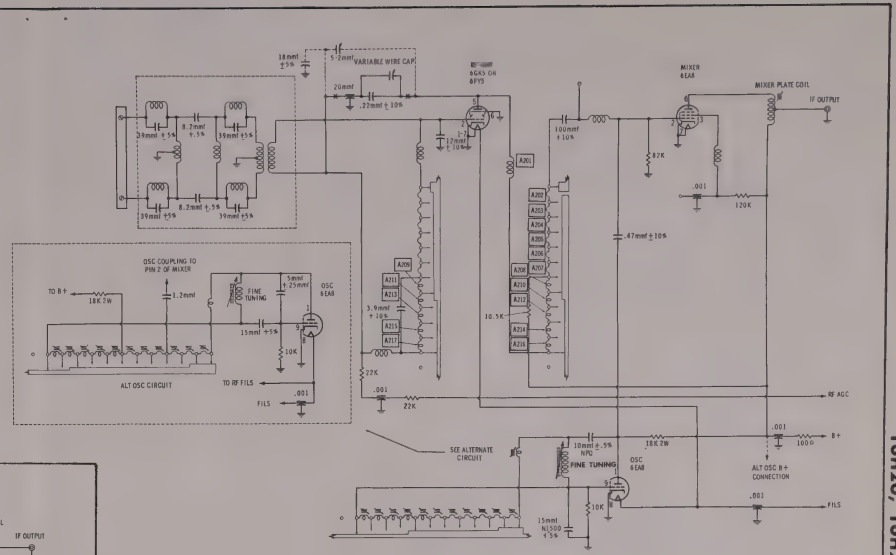
VHF TUNER 175-404



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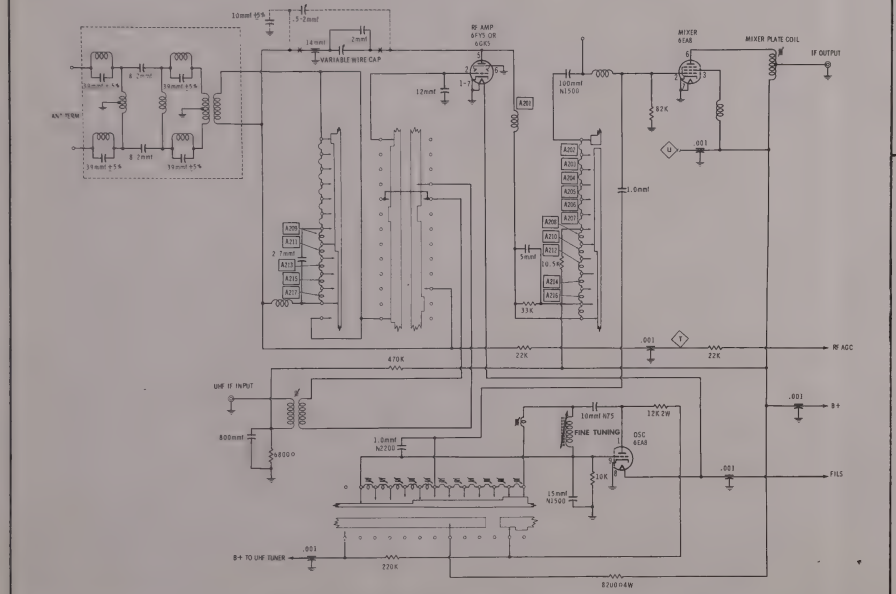
VHF TUNER 175-202



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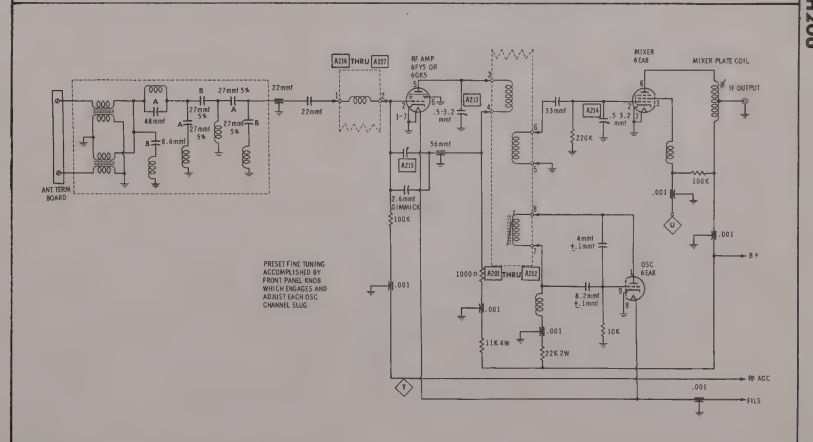
VHF TUNER WITH UHF PROVISIONS 175-201


RF AMP 6FY5 OR 6GK5
MIXER 6EA8
MIXER PLATE COIL
IF OUTPUT
ANT TERM BOARD
PRESET FINE TUNING ACCOMPLISHED BY FRONT PANEL KNOB WHICH ENGAGES AND ADJUST EACH OSC CHANNEL SLUG
OSC 6EA8
RF AGC
FILS

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VHF TUNER 175-310

VHF TUNER ALIGNMENT INSTRUCTIONS

175-404, 175-310

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

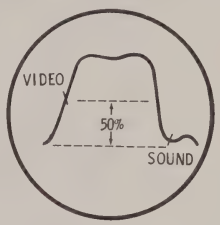


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

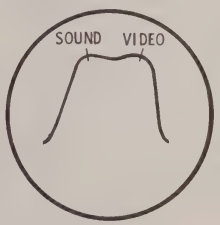
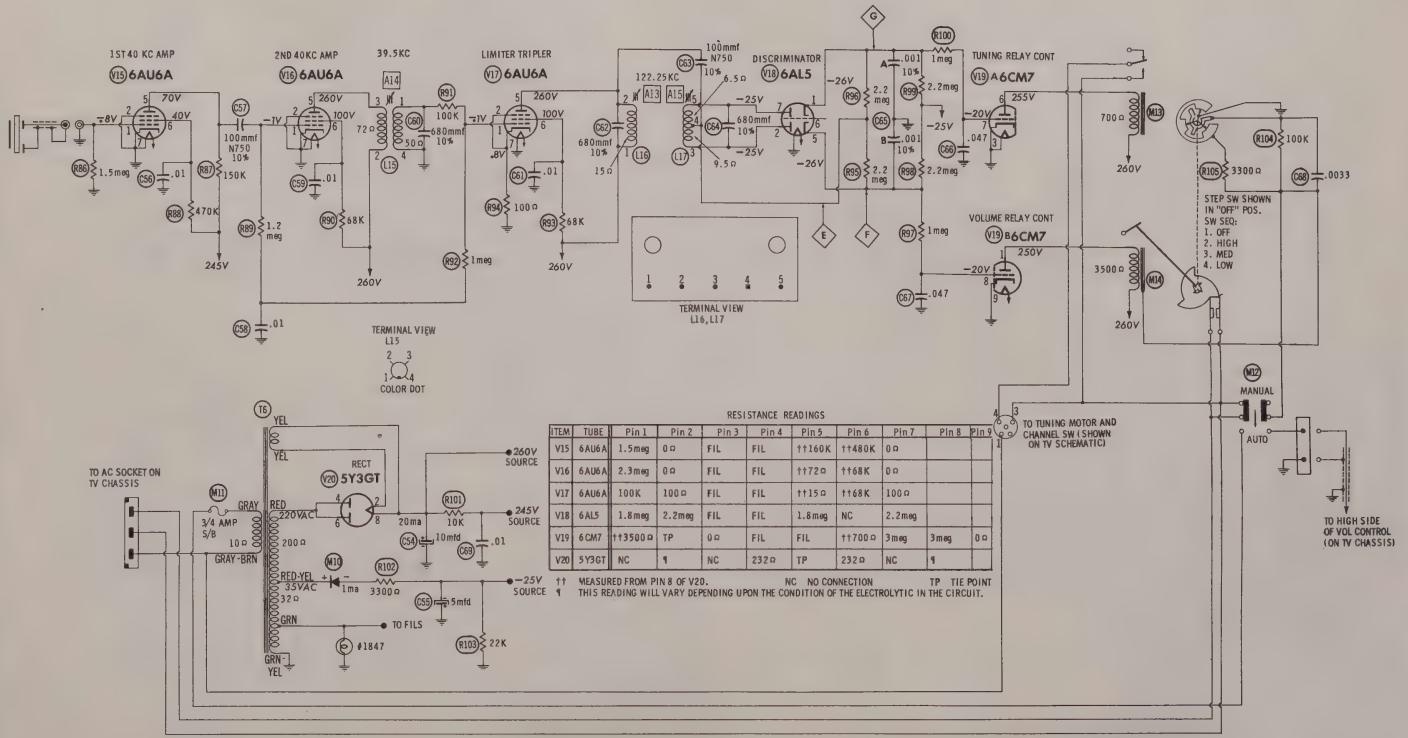


FIG. 202



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V15	6AU6A	1.5meg	0Ω	FIL	FIL	††160K	††480K	0Ω		
V16	6AU6A	2.3meg	0Ω	FIL	FIL	††72Ω	††68K	0Ω		
V17	6AU6A	100K	100Ω	FIL	FIL	††15Ω	††68K	100Ω		
V18	6AL5	1.8meg	2.2meg	FIL	FIL	1.8meg	NC	2.2meg		
V19	6CM7	††3500Ω	TP	0Ω	FIL	FIL	††700Ω	3meg	3meg	0Ω
V20	5Y3GT	NC	¶	NC	232Ω	TP	232Ω	NC	¶	

†† MEASURED FROM PIN 8 OF V20. NC NO CONNECTION TP TIE POINT
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

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REMOTE CONTROL RECEIVER S-53203

REMOTE CONTROL RECEIVER PARTS LIST

TUBES

ITEM No.	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	ITEM No.	RAYTHEON — USE	RAYTHEON — TYPE	SYLVANIA — USE	SYLVANIA — TYPE
V18	1st 40 EC Amp.	6AU8A	V18	Discriminator	6AL5		
V18	2nd 40 EC Amp.	6AU8A	V19	Tuning Relay Control - Volume Relay Control	6CM7		
V17	Limiter-Tripler	6AU8A		Rectifier	5Y3GT		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C54	10	350	22-2943	PRS520	BR1045	GTI-6	TC83	TD-10-450	TVA-1804
C55	5	50	22-3206 ①	PRS310	BBR5-150	GTI-3	TC90	TD-5-50	TVA-1303

① Some versions may use Part #22-2941

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C56	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C57	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CNT-310	10TCU-T10
C58	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C59	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C60	680 10%		1469-00068		SR5T68	CM-19B-681K	MC2349	M3-368
C61	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C62	680 10%		1469-00068		SR5T68	CM-19B-681K	MC2349	M3-368
C63	100 N750 10%	DTN-100	N750-DI 100		C10T1U	CCTN-101	CNT-310	10TCU-T10
C64	680 10%		1469-00068		SR5T68	CM-19B-681K	MC2349	M3-368
C65A	.001 10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
B	.001 10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
C66	.047 200V		P388N-047	DD-503	CUB3S47	4DP-3-473	GEM-4147	3TM-S47
C67	.047 200V		P388N-047	DD-503	CUB3S47	4DP-3-473	GEM-4147	3TM-S47
C68	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	B-332	5HK-D33
C69	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS	ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R86	1.5meg				R95	2.2meg			
R87	150K				R97	1meg			
R88	470K				R98	2.2meg			
R89	1.2meg				R99	2.2meg			
R90	68K				R100	1meg			
R91	100K				R101	10K			
R92	1meg				R102	3300Ω			
R93	68K				R103	22K			
R94	100Ω				R104	100K			
R96	2.2meg				R105	3300Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L15	40-75 EC	S-43725					
L16	Discriminator Pri.	S-34788					
L17	Discriminator Sec.	S-34789					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T6	117V ②	230V ② .030A Tap ②35V 2.00A, 6.3V ② 1.8A	5V ② 2A	95-1898					

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ZENITH PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M10	001A	212-21		Model 12	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M11	3AG	3/4A 250V S/B	136-41		313.750 (3AG 3/4A 250V S/B)	357001	MDL 3/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M12	Switch	86-845	Auto-Manual (DPDT Slide Type)
M13	Relay	195-5 or 195-6	C.W.
M14	Relay	E-42883	Stop (Volume), Includes Stepper Switch

VHF TUNER PARTS LIST AND DESCRIPTIONS

175-404

TUBES

ITEM No.	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	ITEM No.	RAYTHEON — USE	RAYTHEON — TYPE	SYLVANIA — USE	SYLVANIA — TYPE
V301	RF Amp.	6GK5	V302	Mixer - Osc.		6CG8A	

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C301A	27	N750 10%							
B	27	N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C302A	27	N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
B	27	N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C303	20	7.5%	#22-3111						
C304	20	N750 5%			DTN-20	C10Q2U		CN7-420	10TCU-Q20
C305	.001			EF-001	MFT-1000		CCF-102	CT280A	
C306	2-8		#22-3572		829-7				
C307	100	5%	#6-53741						
C308	5-3				829-3		CY-1	CT565	
C309	33			NPO-SI 33	TCZ-33	C10Q33C	CCTN-330	CNO-433	10TCC-Q33
C310	5-3				829-3		CY-1	CT565	
C311	40								
C312	.75	10%	#22-3112						
C313	2.2	N220 5%	#22-3567						
C314	15	N220 5%	#22-3563				*		
C315	5-3				829-3		CY-1	CT565	
C316	.001			EF-001	MFT-1000		CCF-102	CT280A	
C317	.001			EF-001	MFT-1000		CCF-102	CT280A	

Zenith Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS	ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R301	47K				R304	220K			
R302	1200Ω				R305	4700Ω			
R303	2200Ω				R306	4700Ω			

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L301	Ant. Trans.	S-53545	Includes Filter Assembly
L302	RF Choke	20-928	
L303	RF Choke	20-926	
L304	RF Choke	20-880	
L305A	Ant., RF, Mixer, & Osc.	174-82	Channel 2
B	"	174-83	Channel 3
C	"	174-84	Channel 4
D	"	174-85	Channel 5
E	"	174-86	Channel 6
L305F	Ant., RF, Mixer, & Osc.	174-87	Channel 7
G	"	174-88	Channel 8
H	"	174-89	Channel 9
J	"	174-90	Channel 10
K	"	174-91	Channel 11
L	"	174-92	Channel 12
M	"	174-93	Channel 13
L306	RF Choke	20-927	
L307	Mixer Plate	8-47370	

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	ITEM No.	RAYTHEON — USE	RAYTHEON — TYPE	SYLVANIA — USE	SYLVANIA — TYPE
V1	1st Video IF Amp.	6BZ6	V7	Audio Output	6AQ8A		
V2	2nd Video IF Amp.	6BZ6	V8	Vert. Mult.- Vert. Output	6EM7		
V3	3rd Video IF Amp.	6BZ6	V9	Horiz. AFC - Horiz. Osc.	6BL8/ECF80		
V4	Video Output - Sound IF Amp.	6DX8	V10	Horiz. Output	6DQ6B		
			V11	Damper	6AX4GTB (6DA4A, 6CQ4) *		
V5	AGC Keying - Sync Sep. - Noise Limiter	6BU8 (6H8S) *	V12	HV Rectifier	1X2		
V6	Audio Detector	6BN6	V13	LV Rectifier	1N4GB		

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V14	19BDP4		19BDP4 ①		19BDP4 ②	① Aluminized ② Silver Screen "25"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	a 40	400	22-3123	AFH3-12I-50	BO715	FP229.8	TMD-3550	TD-40-450	TVL-3663
B	a 80	400			BR8045	FC78	TD-40-450		
C	a 100	50				QT1-14			
C2A	a 10	400	22-2744	AFH3-180	C0910	XC3-8	FP368.88	TMT-3459	TVL-3668
B	a 4	350							
C	20	25							
C3	1	350	22-3496	PRH700	BR145	QT1-1	TC595	TD-2-450	TVA-1700

FIXED CAPACITORS

ITEM No.	RATING			REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.15	200V			P388N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C5	470				DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C6	3.3	NPO	10%		NPO-DI 3.3	DTZ-3R3	C10Y33C	CCTO-3R3	CNO-533	10TCC-Y39
C7	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8A	10	NPO	5%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
B	10	NPO	5%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C9	.15	200V			P388N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C10A	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
B	.001		10%		DI-1000	DD-103	SR5D1	CCD-102	GP310	10TS-D10
C11	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
C12	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
C13	270	N750	10%			DTN-27U	C10T27U	CCTN-271	CNT-327	10TCU-T27
C14	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C15	470	N1500	10%	#22-3363				*		
C16	5.5	N470	± .5mmf							
C17	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10Y47C	CCTO-4R7	CNO-547	10TCC-Y47
C18	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10Y47C	CCTO-4R7	CNO-547	10TCC-Y47
C19	.022	200V	10%		Y5C-223Z-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C20	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C21	50				SI 50	DD-500	LJ0Q2	CCD-500	GP450	10TS-Q50
C22	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C23	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
C25	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	3.3		5%		NPO-SI 3.3	TCZ-3R3	C10Y33C	CCTO-3R3	CNO-533	10TCC-Y33C
C27	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
C28A	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
B	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
C29	30	N075		#22-3139				*		
C30	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	.0033				BPD-0033	DD-332	BYA10D33	CCD-332	B-333	5HK-D33
C32	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	.0033				BPD-0033	DD-332	BYA10D33	CCD-332	B-333	5HK-D33
C34	.047				DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C35	.018	400V	10%		P684CM-018		PM4S2	4DP-2-203	GEM-1612	4TM-S20
C36	.0082	200V	10%		P684CM-0082		DPM38D82	6DP-1-522	GEM-16282	6PS-D82
C37	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C38	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C39	.015	1000V	10%				DPM38S15	16DP-4-153		10TM-S15
C40A	51				DI-50	DD-501	LJ0Q51	CCD-500	GP450	10TS-Q50
B	51				DI-50	DD-501	LJ0Q51	CCD-500	GP450	10TS-Q50
C41A	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
B	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP310	10TS-D10
C42	.047	300V	10%		Y5C-473Z-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C43	100				DI-100	DD-101	LJ0T1	CCD-101	GP310	10TS-T10
C44	.001		10%		1469-001		SR5D1	CM-19B-102K	MCB255	M3-2I
C45	.0033	400V	10%		Y5C-4D33-10%		PM5D33	6DP-1-332	GEM-16233	6TM-D33
C46	470		10%		1469-00047		SR5T47	CM-19B-471K	MCJ347	M3-347
C47	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C48A	.0015				BPD-2X0015	DD3-152	BYC5DD15	CCD-152	B3X2I5	5HK-3D15
B	.0015							CCD-153		
C49	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C50	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C51	145	4000V	N1500 10%	#22-2899						
C52	75	2000V	N750 10%							
C53	.001		10%		DI-1000	DD-102	SR5D1	CCD-102	GP210	10TS-D10

Zenith Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST ANCE	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch (Push-Pull Off-On)	1meg	63-4961	APL-897,	C47S-1meg-S/	B11-137, SK3, or	*PP16L, D8-37
R2	Contrast (UK Tap)	30K	63-4493	AK-33	RS-3/16	PP2G1-137 (SK3)	
R3	Brightness	250K	63-4492	AB-50, AK-33	A47-250K-S/	B20-12I3, SK3	UT-415, D8-37
					RS-3/16	B11-130, SK3, or	U46, D8-37, or
						(B11L, CF15,	(TA2541,
						SB4, DC1) †	D8-37)

SET 569 FOLDER 2

ZENITH CHASSIS 16H20, 16H20Q, 16H20U

FOLDER 2

CONTROLS (cont)

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R4	Vert. Hold	750K	63-4491	AB-66, AK-33	A47-750K-S, RS-3/16	B11-136, SK9	U54, D6-37
R5	Fringe Lock (Sync Stab.)	5meg	63-4050	TT-87, or B-87	B47-5meg-S	HLC-5	PTA56L, or TA56L
R6	Buzz (100Ω Stop)	750Ω (2W)	63-3284	WN-751 *	39-800 *	113-650 *	FL-750 *
R7	Vert. Linearity (700Ω Stop)	2500Ω (2W)	63-4815	WN-302 †	39-3000-700	113-2500-700	FL-2.5K †
R8	Vert. Size (Height) (7meg Stop)	7.5meg	63-4647	TT-90 ▲, or B-90 ▲	B47-7.5meg-S ▲	HLC-8 ▲	PTA75L ▲, or SU-59 ▲, PTA12L ▲, or TA16L
R9	AGC	1meg	63-4633	TT-69, or BX-69	B47-1meg-S	B11-137, TM4	
R10	Focus	3meg	63-4455	TT-84, or BX-84	B47-3meg-S	HLC-3	TA36L, or SU-69

† "SNAPTROL"
▲ Use 500K Resistor in series with right hand terminal, viewed shaft end terminals down.
↘ Use 100Ω 2W Resistor in series with terminal.
† Use 680Ω 2W Resistor in series with terminal.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R11	4700Ω 7W	PW7-4700	7W-SQ-4700	
R12	2.2meg			
R13	680K			
R14	1000Ω			
R15	15K			
R16	33K			
R17	220Ω			
R18	68Ω			
R19	56K			
R20	1500Ω			
R21	56K			
R22	220Ω			
R23	27Ω			
R24	6800Ω			
R25	4700Ω 3W	PW3-4700	3G-4700Ω	
R26	3.9meg			
R27	820K			
R28	120Ω			
R29	330Ω			
R30	2700Ω			
R31	68K			
R32	2.2meg			
R33	27K			
R34	100K			
R35	6800Ω 3W	PW3-6800	3G-6800	
R36	82K			
R37	22K 1W			
R38	22Ω			
R39	6800Ω			
R40	82K			
R41	39K			
R42	330K			
R43	330K			
R44	470K 1W			
R45	82K			
R46	10meg			
R47	220K			
R48	10K 1W			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R49	470K			
R50	100K			
R51	220K			
R52	10K			
R53	680K 1W			
R54	680Ω			
R55	390K			
R56	27K 2W			
R57	1000Ω 1W			
R58	680Ω 1W			
R59	100K			
R60	68K			
R61	39K			
R62	270K			
R63	1.3meg			
R64	82K			
R65	1000Ω			
R66	2.2meg			
R67	390Ω			
R68	390Ω			
R69	330K			
R70	330K			
R71	1meg			
R72	270K			
R73	68K			
R74	150K			
R75	330K			
R76	120K 2W			
R77	82K			
R78	100Ω			
R79	1meg			
R80	100Ω			
R81	10K 3W	PW3-10K	3G-10K	
R82	150K			
R83	3.3Ω			
R84	33K			
R85	820K			

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Vert. Integrator		87-8	
K2	Vert. Feedback		87-7	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	S-53071	TV-132 ▲	6226	RTC-8628	TZ18	① Complete Assembly Part #S-47967.
B	41.25MC Trap			6226	RTC-8628	TZ18	② Wound on 10K Resistor.
L2A	39.75MC Trap	S-53072	TV-152	6225	RTC-8556	TZ18	③ Complete Assembly Part #S-53052.
B	47.25MC Trap		TV-153	6225	RTC-8556	TZ18	④ Wound on 5600Ω Resistor.
L3	2nd Video IF	S-50474	TV-130	6224	RTC-8555	TZ21	⑤ Complete Assembly Part #S-51647.
L4	3rd Video IF	S-45539	TV-130	6224	RTC-8555	TZ21	▲ Includes Trap.
L5	4th Video IF	S-47968 ①				TC237	▲ Shunt with 10K Resistor.
L6	Peaking (90ch)	S-41879	TV-181	6177	RTC-8594	TZ64	† Shunt with 5600Ω Resistor.
L7	RF Choke (6ch)	S-21888	BC-565	4610	RTC-8520	TZ69	
L8	Peaking (95ch)	S-53067 ②	TV-197 ▲	6154 ▲	RTC-8586 ▲	TZ12 ▲	
L9A	4.5MC Trap	S-42872 ③	TV-120	1483 DT	RTC-8056	TZ53	
B	Sound Takeoff						
L10	Peaking (115ch)	S-43694 ④	TV-195 †	6153 †	RTC-8585 †	TZ07 †	
L11	Sound IF	S-51445 ⑤	TV-149	7101		TZ53	
L12	Quadrature	S-45229	TV-121	1480	RTC-8609	TZ51	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L13	Horiz. Osc. (Horiz. Hold)	S-45679	TV-165	6333 *		H3-7		T104	

* Drill new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~/~	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L14	.240A	65Ω	.8 Hy.	95-1842	C-4084	C-2343	28C44	C-34X	

TV PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	SEC. 4	SEC. 5	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ⑤ 1.45A	520VCT ⑤ 240A DC	5V ⑤ 3A	6.3V ⑤ 7.5A			95-1894	P-2885 ①	P-8356 ①	26R53 ①	R-75BA ①	① Drill new mounting hole(s).

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	95-1841-C	A-3821 *	A-8149 *	26S23 *	A-131X *	
T3	Alt. Vert. Output	95-1841					
	Yoke Horiz. 13.6MH (92°) Vert. 39MH	95-1839	MDF-91 *	DY-39A *	Y-39 *	Y-82-1	
	Rear Cover and Centering Device	S-45098 or S-52327					
T4	Horiz. Output	S-53354	HVO-178 *				

*COMPONENT CONNECTION DATA

ORIGINAL → / REPLACEMENT ↓	HV TRANSFORMER: Original Connections 1	2	3	4	5	6	VERTICAL OUTPUT: Original Connections			YOKE: Original Connections 1	2	3	4	5	6	7	8	YOKE PLUG: Original Connections 1	2	3	4	5	6	7	8
							Blue	Green	Red																
MERIT	4	3	2	1	5		Blue	Green	Red	7	3	2	4	5	6	1	8								
STANCOR							Blue	Black	Red	1	2	3	4	5	6	7	8								
THORDARSON							Blue	Red	Green	1	2	3	4	5	6	7	8								
TRIAD							Blue	Red	Yel.																

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5400Ω	3-4Ω	95-1665	A-3026 ①	A-3877 ①	24S48 ①	S-8Z	① Drill new mounting hole(s).

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	49-966	4A07	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	N	7/10A 250V S/B	136-38	62-21	333.700 (N 7/10A 250V S/B)	346010	N 7/10	HN 1/2 - 3/4
M2	3AG	5A 250V S/B	136-46	83-3575	312003 (3AG 2A 250V S/B)	357001	MDX5	4405
M3	1"	length	of #24 wire					

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M4	*	103-20 *	8GC1 *		* Dual Selenium, Horiz. AFC, Common Cathode Type

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M5	Tuner	175-404	VHF Complete, Models H2211C, H2212F, G
	Tuner	175-310	VHF Complete, Model H2213G
	Tuner	175-202	VHF Complete, Models H1925C, L, H2101C, F, H202R, W, H2103L
	Tuner	175-201	VHF with UHF Provisions, All "U" Models
	Tuner	175-8	UHF, All "U" Models
M6	Antenna (Monopole)	89D123	JFD REPLACEMENT Type #TA402, Models H2101C, CU, F, FU, H202R, RU, W, WU, H2213G, F
	Antenna (Dipole)	89EY789	JFD REPLACEMENT Type #TA373, Models H1031L, LU, H2213G
	Antenna (Monopole)		JFD REPLACEMENT Type #TA-380, Models H1925C, CU, L, LU, &
M7	Switch	85-670 or 85-685	Channel Selector (Part of Power Tuning Assembly) H2211C
M8	Switch	S-53001	Motor Assembly (Part of Power Tuning Assembly)
M9	Motor	141-169	Power Tuning Drive
	Motor Drive Assembly	S-53003	

WIRING DATA

High Voltage Lead	Use BELDEN No. 8889
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

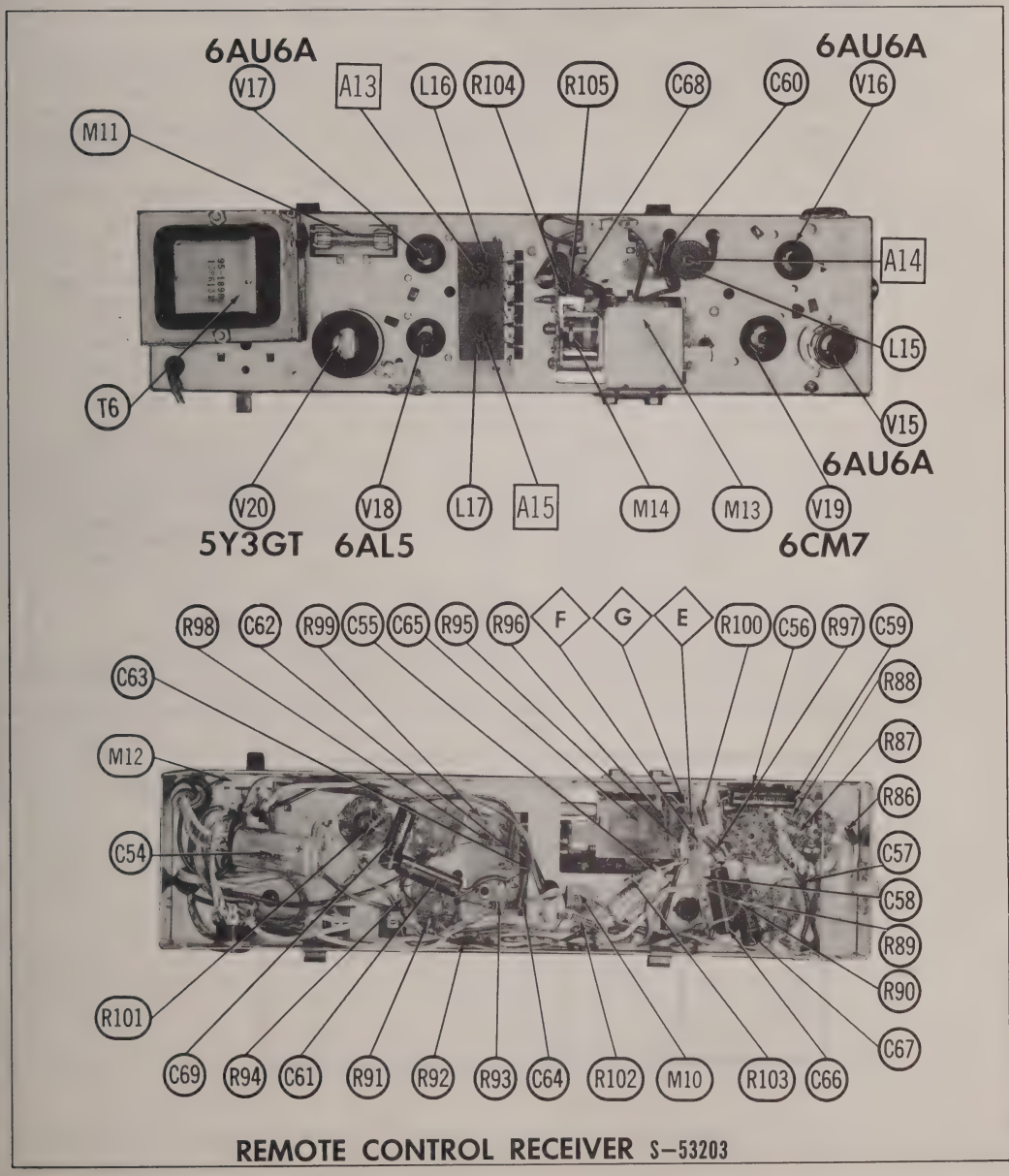
DESCRIPTION	PART NO.	MODEL NO.	H1925C	H1925CU	H1925L	H1925LU	H2101C	H2101CU	H2101F	H2101FU	H202R	H202RU	H202W	H202WU	H2103L	H2103LU	H2211C	H2212G	H2212F	H2213G
Safety Glass	192-293		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Escutcheon	57-3290				X	X														
Escutcheon	57-3287		X	X					X	X										
Escutcheon	57-3286						X	X												
Escutcheon	57-2990										X	X	X	X						
Escutcheon	57-3289																X	X		
Escutcheon	57-3288																		X	
Escutcheon	57-3292																			X
Escutcheon	57-3291																		X	
Escutcheon	57-2991																			X
Channel Selector Knob	46-2180				X	X														
Channel Selector Knob	46-2183		X	X			X	X												
Channel Selector Knob	46-2735								X	X										
Channel Selector Knob	46-2723										X	X	X	X	X	X				
Channel Selector Knob	S-53116																X	X	X	X
UHF Tuning Knob	S-47079			X		X		X		X		X		X		X				
UHF Dial Knob	S-43927			X		X		X		X		X		X		X				
Fine Tuning Knob	S-49930		X	X	X	X														
Fine Tuning Knob	S-52253						X	X	X	X										
Fine Tuning Knob	S-52264										X	X	X	X	X	X				
Fine Tuning Knob	S-53118																X	X	X	
Fine Tuning Knob	S-46215																			X
Volume Knob	S-45716		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brightness Knob	S-52533				X	X														
Brightness Knob	S-51171		X	X			X	X									X			
Brightness Knob	S-52643								X	X									X	X
Brightness Knob	S-49990										X	X	X	X	X	X				X
Contrast Knob	S-52533				X	X														
Contrast Knob	S-51171		X	X			X	X									X			
Contrast Knob	S-52643								X	X									X	X
Contrast Knob	S-49990										X	X	X	X	X	X				X
Vert. Hold Knob	S-52533				X	X														
Vert. Hold Knob	S-51171		X	X			X	X									X			
Vert. Hold Knob	S-52643								X	X									X	X
Vert. Hold Knob	S-49990										X	X	X	X	X	X				X
Horiz. Hold Knob	S-46215		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
UHF Drive Belt	S-45472			X		X		X		X		X		X		X				
Cabinet	14-3838				X															
Cabinet	14-3839					X														
Cabinet	14-3840		X																	
Cabinet	14-3841			X																
Cabinet	14-3818						X													
Cabinet	14-3819							X												
Cabinet	14-3820								X											
Cabinet	14-3821									X										
Cabinet	14-3824										X									
Cabinet	14-3825											X								
Cabinet	14-3822												X							
Cabinet	14-3823													X						
Cabinet	14-3834														X					
Cabinet	14-3835															X				
Cabinet	14-3817																X			
Cabinet	14-3831																		X	
Cabinet	14-3830																	X		
Cabinet	14-3826																			X

REMOTE CONTROL RECEIVER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru 100K to pin 1 (grid) of 1st Amp. (V15). Low side to chassis.	40.75KC (Unmod.)	DC probe thru 1meg to point (F). Common to point (G).	A13, A14	Adjust for maximum deflection.
2.	"	"	DC probe to point (F). Common to point (G).	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.



REMOTE CONTROL RECEIVER S-53203

VHF TUNER ALIGNMENT INSTRUCTIONS

175-201, -202

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

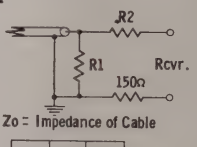
VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range by turning the Fine Tuning shaft until the small index hole in the drive cam is directly over the small hole just below the channel 13 oscillator adjustment screw. Starting with the highest channel operating in the area, adjust the appropriate oscillator adjustment screw for best picture and sound for each channel available.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2 volt bias supply to point ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usuable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. amp. thru 10K to point ⓓ. Low side to chassis.	A201	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown.
2.	"	"	207MC	205.25MC 209.75MC	12	"	A202	"
3.	"	"	201MC	199.25MC 203.75MC	11	"	A203	"
4.	"	"	195MC	193.25MC 197.75MC	10	"	A204	"
5.	"	"	189MC	187.25MC 191.75MC	9	"	A205	"
6.	"	"	183MC	181.25MC 185.75MC	8	"	A206	"
7.	"	"	177MC	175.25MC 179.75MC	7	"	A207	"
8.	"	"	85MC	83.25MC 87.75MC	6	"	A208, A209	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust first coil for proper marker position and second coil for maximum gain and symmetry.
9.	"	"	79MC	77.25MC 81.75MC	5	"	A210, A211	"
10.	"	"	69MC	67.25MC 71.75MC	4	"	A212, A213	"
11.	"	"	63MC	61.25MC 65.75MC	3	"	A214, A215	"
12.	"	"	57MC	55.25MC 59.75MC	2	"	A216, A217	"



Zo = Impedance of Cable

Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

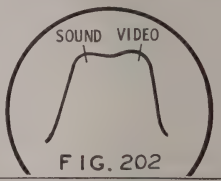
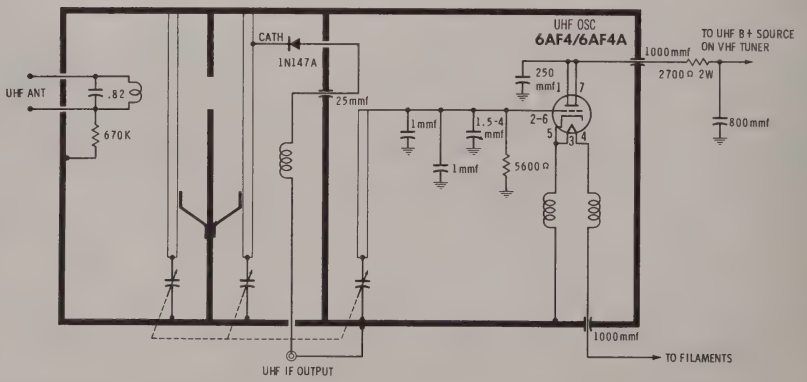


FIG. 202



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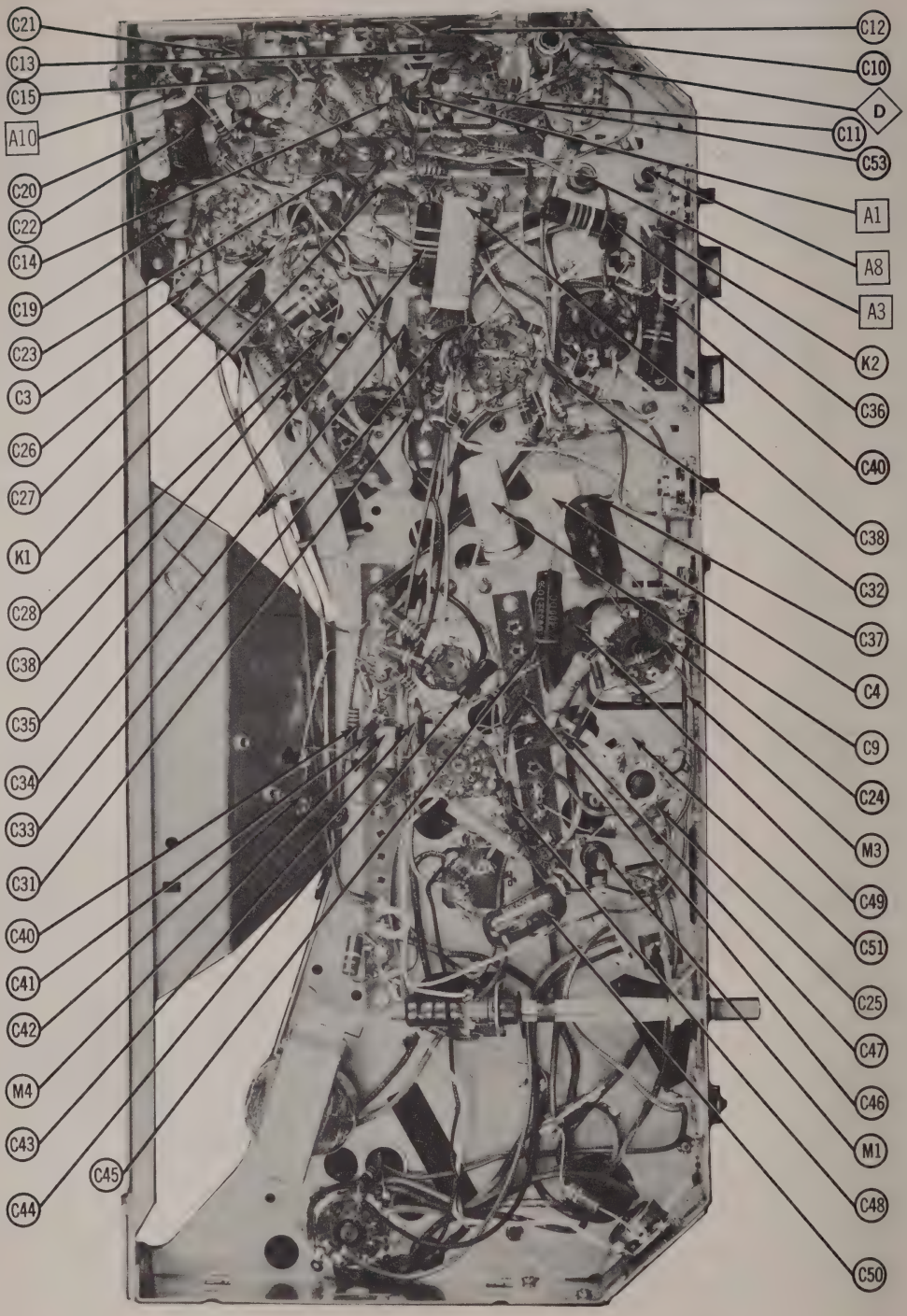
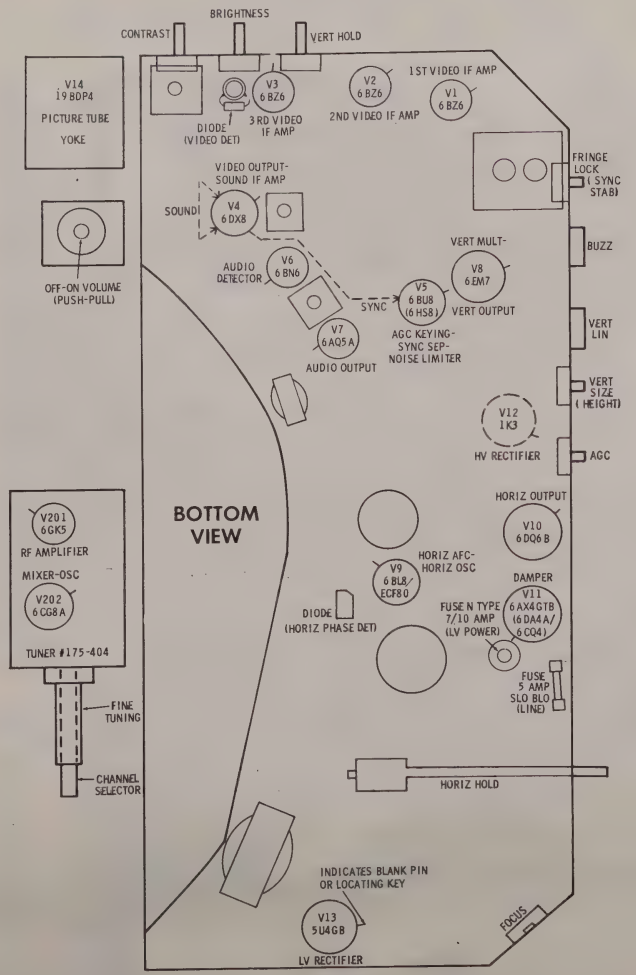
UHF TUNER 175-8



TV CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.

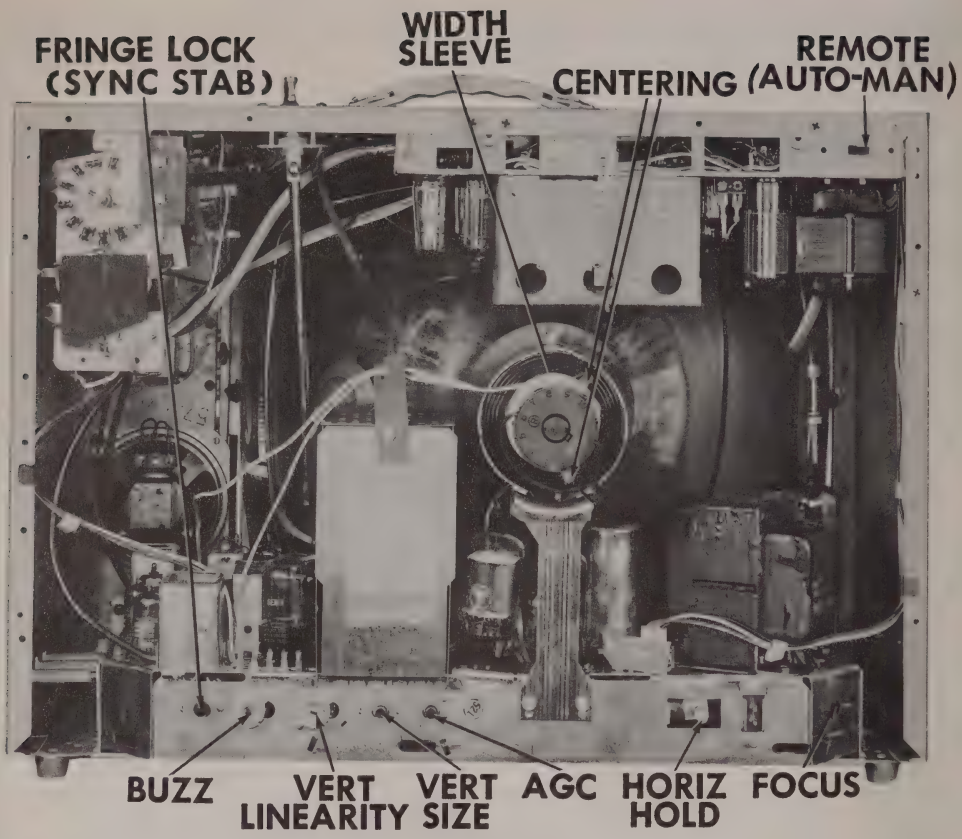
TV TUBE PLACEMENT CHART



TV RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.5meg	1560Ω	FIL	FIL	▪ 220Ω	▪ 220Ω	1500Ω		
V2	6BZ6	40K	INF	FIL	FIL	†285Ω	†285Ω	▪27Ω		
V3	6BZ6	.1Ω	120Ω	FIL	FIL	†4700Ω	†4700Ω	0Ω		
V4	6DX8	100K	†680K	0Ω	FIL	FIL	†6000Ω	22Ω	3000Ω	†22K
V5	6BU8	0Ω	†15K	800K	FIL	FIL	● 1meg	●2.5meg	†50K	†10meg
V6	6BN6	● 300Ω	.6Ω	FIL	FIL	†27K	3.8Ω	†390K		
V7	6AQ5A	NC	680Ω	FIL	FIL	†1630Ω	†1000Ω	●100K		
V8	6EM7	2.2meg	†585Ω	● 1800Ω	● 600K	● †6meg	0Ω	FIL	FIL	
V9	6BL8/ ECF80	†68K	120K	†33K	FIL	FIL	†120K	27Ω	0Ω	1.8meg
V10	6DQ6B	NC	FIL	NC	†10K	1meg	TP	FIL	0Ω	TOP CAP †17Ω
V11	6AX4GTB	TP	TP	3meg	NC	†65Ω	TP	FIL	FIL	
V12	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †235Ω
V13	5U4GB	NC	¶ 50K	TP	25Ω	NC	28Ω	TP	¶ 50K	
V14	19BDP4	FIL	0Ω	Pin 6 ● †1meg	Pin 10 †330K	Pin 11 ●120K	Pin 12 FIL			
V201	6GK5	0Ω	3meg	FIL	FIL	†5900Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†9400Ω	0Ω	FIL	FIL	†4700Ω	†4700Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 2 OF V13. ▪ MEASURED FROM PIN 2 OF V2.
† MEASURED FROM PIN 3 OF V11. NC NO CONNECTION TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The Horizontal Hold is equipped with a stop which limits rotation to 270° with the knob on the shaft. To adjust, remove the knob and adjust by turning the shaft until the picture is synchronized to the point where it is virtually impossible to disrupt horizontal synchronization when switching from channel to channel. Install knob with the pointer centered between the stops.

DISASSEMBLY INSTRUCTIONS

SERVICE NOTE: The Chassis may be serviced by removing bottom plate and rear cover of cabinet.

CABINET REMOVAL

1. Remove 2 push-on type knobs from front and 3 from side.
2. Remove rear cover (6 screws).
3. Remove 4 screws holding remote control receiver; disconnect 2 plugs and 2 slip-on type connectors.
4. Remove Remote Control Receiver.
5. Remove 2 screws holding tuner bracket, disconnect 4 push-on type connectors and IF input lead.
6. Remove tuner bracket assembly.
7. Remove 4 screws from bottom holding wrap around cabinet.
8. Remove 6 screws (at front inside, top and sides) holding wrap around cabinet.
9. Remove cabinet.

PICTURE TUBE REMOVAL

Follow "Cabinet Removal" instructions for access to picture tube.

PHOTOFACT® Folder with CIRCUITRACE®

AMERICANA
MODEL ST-6Z

AMERICANA
MODEL ST-6Z

AMERICANA
MODEL ST-6Z

TRADE NAME	Americana Model ST-6Z
IMPORTER	Americana Industries, Ind., 170 Broadway, New York 38, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	4.5 Volts DC RATING 9MA @ 4.5 Volts DC (No Signal, Minimum Volume)
TUNING RANGE	BROADCAST 535-1605KC 15MA @ 4.5 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3 .. GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A6 ..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

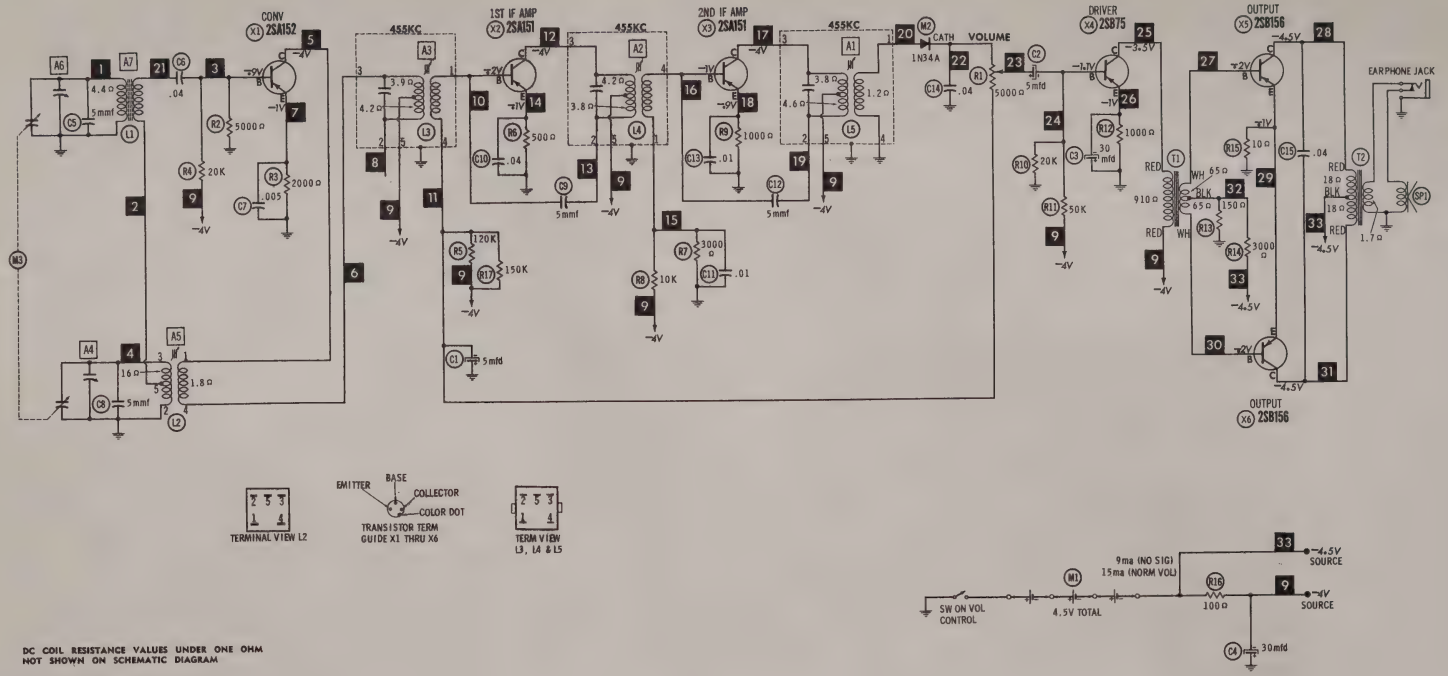
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KC (400∿ Mod.)	Tuning gang fully open	Across Voice Coil	A1, A2, A3	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal	"	A6	"
5.	"	600KC	600KC Signal	"	A7	Adjust for maximum output by moving antenna coil turns along ferrite core.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KF923

SET 569 FOLDER 3



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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AMERICANA MODEL 5T-6Z

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2SA152	Converter	2N412		PNP
X2	2SA151	1st IF Amplifier	2N410		PNP
X3	2SA151	2nd IF Amplifier	2N410		PNP
X4	2SB75	Driver	2N406		PNP
X5	2SB156	Output	2N408		PNP
X6	2SB156	Output	2N408		PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	AMERICANA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	5	6							
C2	5	6							
C3	30	6							
C4	30	6							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	5mmf		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C6	.04							
C7	.005		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C8	5mmf		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C9	5mmf		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C10	.04							
C11	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C12	5mmf		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C13	.01		C80V103AM	DA-103	H-05S1		TA-110	TG-S10
C14	.04							
C15	.04							

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AMERICANA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10						Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R2	5000Ω			
R3	2000Ω			
R4	20K			
R5	120K			
R6	500Ω			
R7	3000Ω			
R8	10K			
R9	1000Ω			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R10	20K			
R11	50K			
R12	1000Ω			
R13	150Ω			
R14	3000Ω			
R15	10Ω			
R16	100Ω			
R17	150K			

PRINTED BOARD

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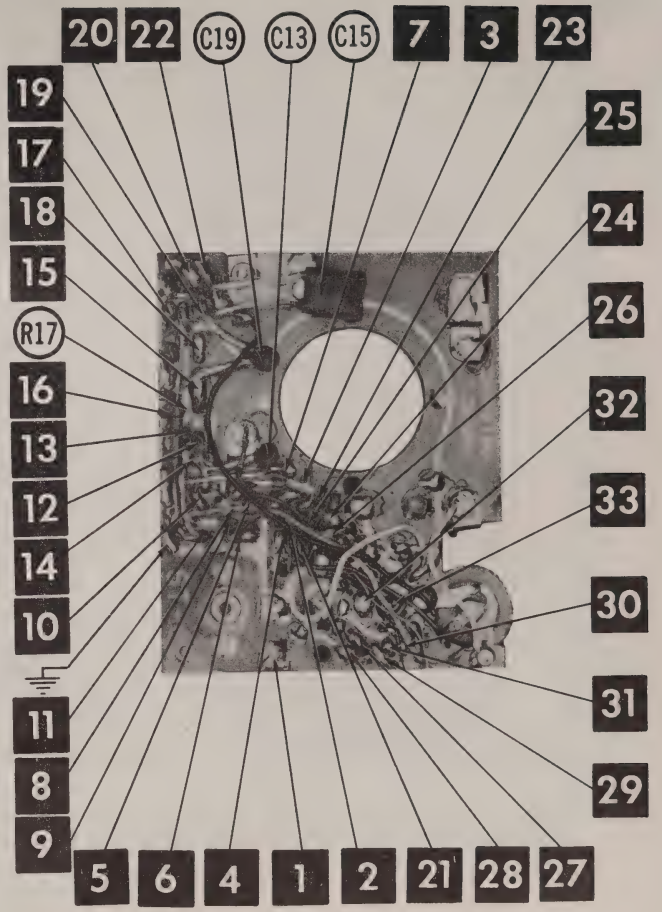


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AMERICANA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick						
L2	Oscillator						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AMERICANA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.2	1	T-114		TR-40			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AMERICANA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	400Ω CT	10-12Ω	T-216		TR-47			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AMERICANA PART No.	QUAM PART No.	
SP1	2"	PM	10-12Ω			

BATTERIES

ITEM No.	VOLTAGE	AMERICANA	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
		PART No.	"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	W468		N				M-910F	3 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		AMERICANA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	1N34A			1N34A	Detector

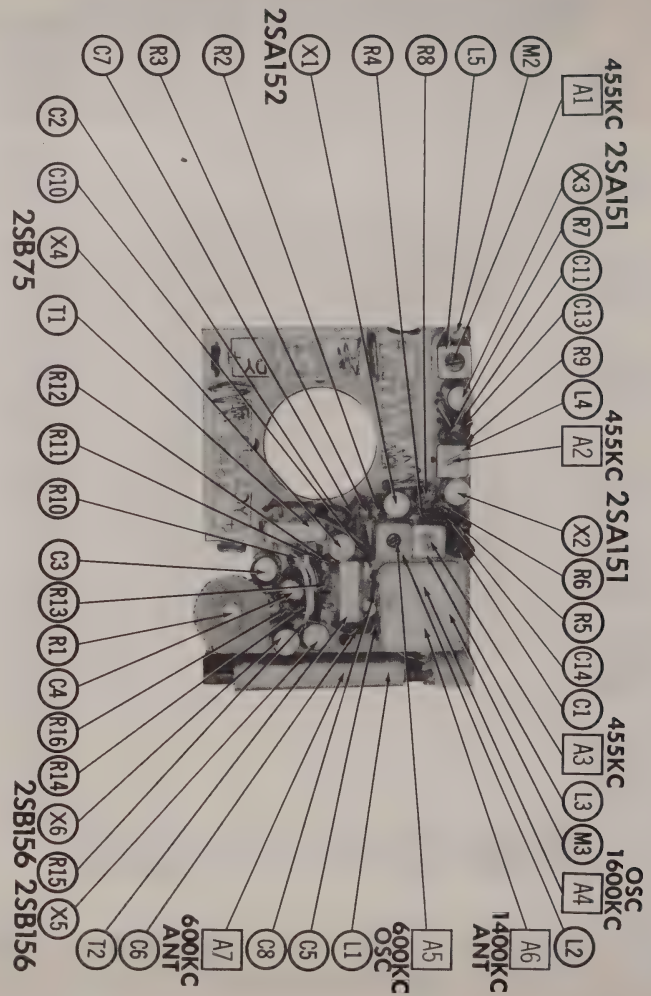
MISCELLANEOUS

ITEM No.	PART NAME	AMERICANA PART No.	NOTES
M3	Tuning Cap.		2 Gang

WIRING DATA

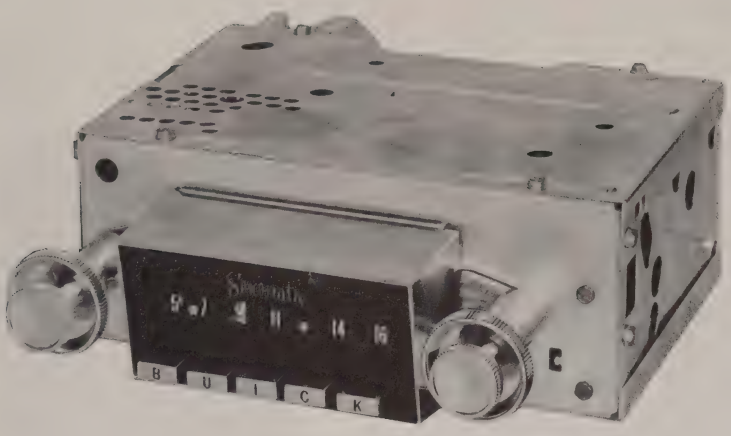
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

BUICK MODEL 980134



TRADE NAME	Buick Model 980134 (For 1961 Buicks)
MANUFACTURER	Delco Radio Div., General Motoros Corp., Kokomo, Indiana
TYPE SET	Battery Operated 3 Tube — 2 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.8 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1615KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A5, A9, A10.....GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

A6, A7, A8.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil forms.					
2.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	"
3.	"	600KC	600KC Signal.	"	A9, A10	"
4.	"	1615KC	High end stop.	"	A7, A8	"
5.	"	100KC	100KC Signal.	"		Adjust pointer adjustment until pointer coincides with 1100 on dial.
6.	With radio installed in car and antenna fully extended, tune in a weak station and adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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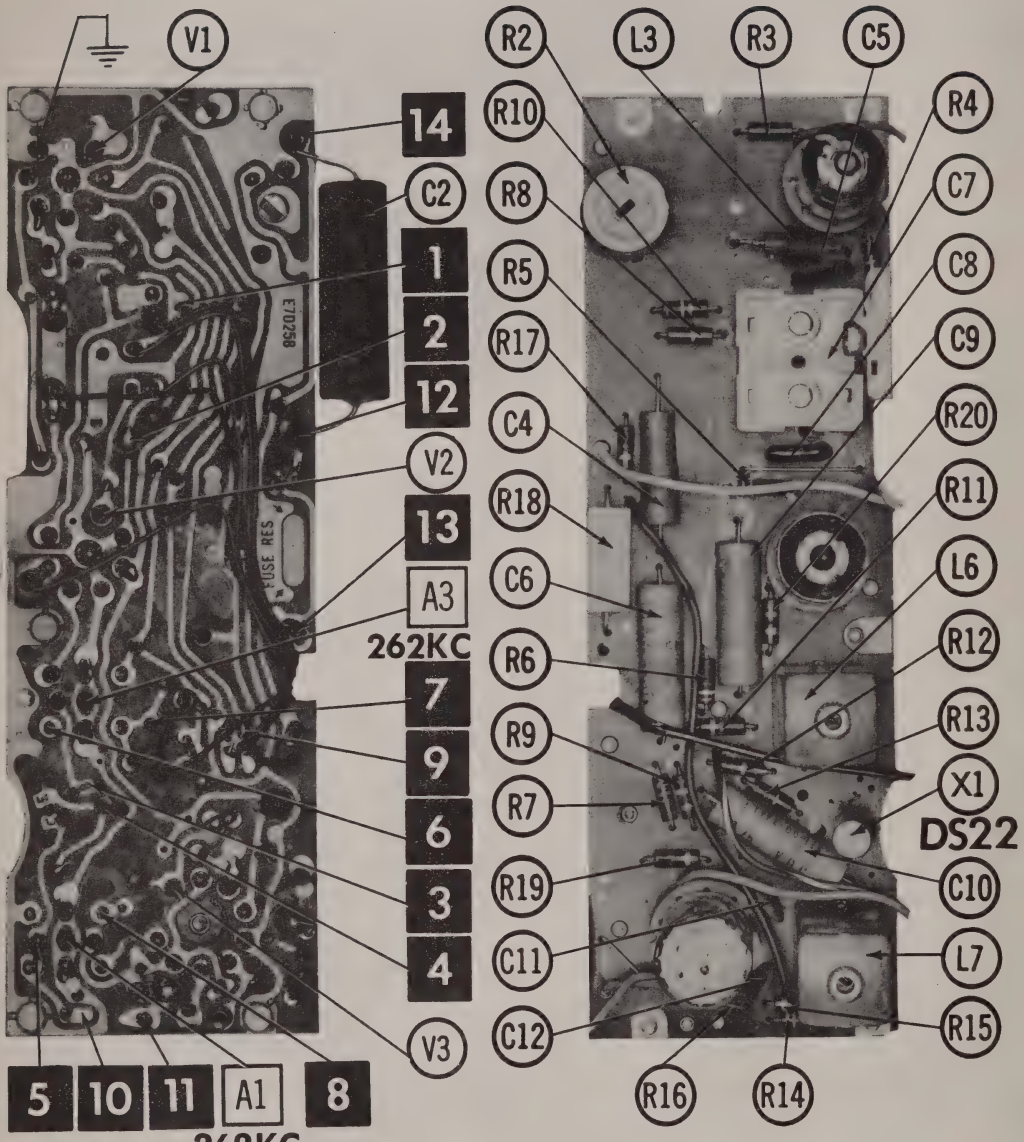
KD948

BUICK MODEL 980134
BUICK MODEL 980134
SET 569 FOLDER 4



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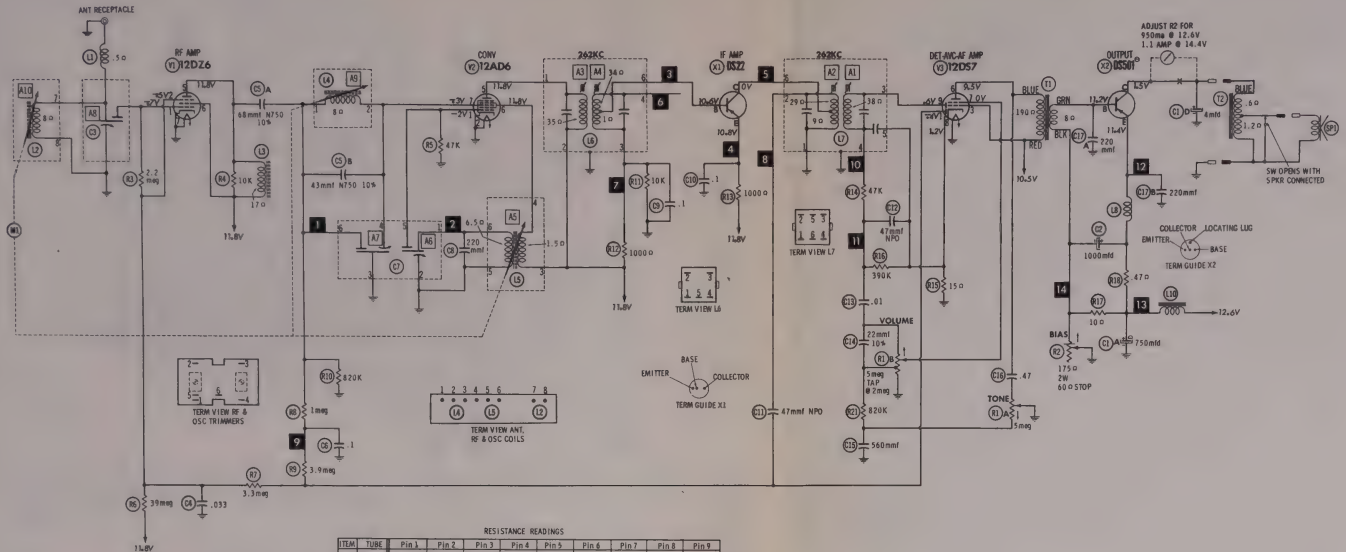
PRINTED BOARD

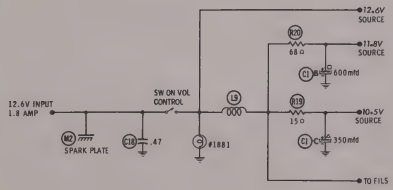
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	10meg	8meg	FIL	FIL	85Ω	70Ω	0Ω		
V2	12AD6	47K	0Ω	FIL	FIL	130Ω	70Ω	820K		
V3	12DS7	5.7meg	TP	20Ω	FIL	FIL	210Ω	0Ω	15Ω	437K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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BUICK MODEL 980134

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

◆ GENERAL ELECTRIC ◆			◆ RAYTHEON ◆ SYLVANIA ◆		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V3	Det.-AVC-AF Amp.	12D87
V2	Converter	12AD6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA RAYTHEON PART No.	NOTES
X1	DS22	IF Amplifier	2N1638		PNP
X2	DS501	Output	2N176		PNP Note 1

Note 1. When replacing, apply silicone grease between transistor and heat sink. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▲750	16	7273728	AFH4-20-75	D0187		WP401.5		TVLS-4204*
B	■600	16							
C	▲350	16							
D	4	11.5AC							
C2	1000	1	7271557	PRS1130	BR1000-6	QT1-32	PETA120	TD-1000-6	TVA-1104

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#7275275						
C4	.033 75V		P288N-033	DD-303	DPMS4S33	1DP-1-333	GEM-4133	4PS-S33
C5A	68 N750 10%		N750-DI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	43 N750 10%		N750-DI 39	TCN-43	C10Q43U	CCTN-390	CN7-439	10TCU-Q39
C6	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C7		#7273693						

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	220 5%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	MS-322
C9	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C10	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C11	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C12	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C13	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C14	22 10%		1469-000022	DTZ-22	22R5Q22	CM-19B-220K	CNO-422	MS-422
C15	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C16	.47 100V		P288N-47		CUB2P47	1DP-4-474	GEM-2047	2TM-P47
C17A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C18	.47 100V		P288N-47		CUB2P47	1DP-4-474	GEM-2047	2TM-P47

Delco Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg	1/2	7277155				■ UE4251-S	Tone Volume
B	5meg 2meg Tap	1/2						
C	Switch							Power Off-On Bias
R2	175Ω 60Ω Stop	2(WW)	1221422 ①					

① Temperature Compensated.
■ "STA-LOC" Equivalent: FT56L, RU56T26, OS1750, IS2375, US41.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REMARKS
R3	2.2meg			
R4	10K			
R5	47K			
R6	39meg			
R7	3.3meg			
R8	1meg			
R9	3.9meg			
R10	820K			
R11	10K			
R12	1000Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REMARKS
R13	1000Ω			
R14	47K			
R15	15Ω			
R16	390K			
R17	10Ω			
R18	.47Ω			Pt. #7270608
R19	15Ω			
R20	68Ω			
R21	820K			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(6.5uh)	7255738	BC-565	4610	RTC-8520	T858	
L2	Ant.	1221138					
L3	RF Choke (1.8MH)	7269684	BC-514	4664	RTC-8533	T875	
L4	RF	1221138					
L5	Osc.	1221151					
L6	Input IF	7275770					
L7	Output IF	1221253	BC-424				
L8	RF Choke (1.4uh)	1217846					
L9	Hash Choke (1.4uh)	1217846					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L10	1A	.7Ω	.001HY	7274342		TC-2			

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	13	1	7272822		TA-51			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap ⓐ 3-4Ω	1221522		TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x 10"	PM	3-4Ω	7277408	410A2	

MISCELLANEOUS

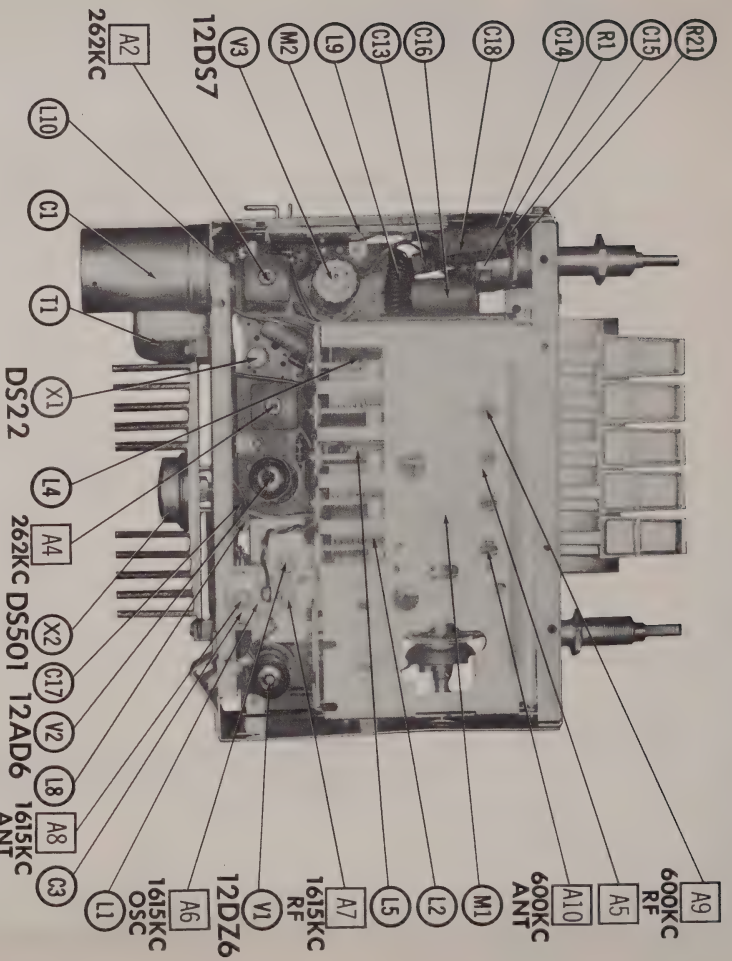
ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		Pushbutton Type (Series P2)
M2	Spark Plate	1221503	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	1221508	
B Pushbutton	7277126	
U Pushbutton	7277127	
I Pushbutton	7277128	
C Pushbutton	7277129	
K Pushbutton	7277130	
Knob	1199769	Tuning, Volume
Knob	1199714	Tone, Dummy

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

BULOVA MODELS
350, 352, 353, 355

BULOVA MODELS
350, 352, 353, 355

MODEL 352

BULOVA MODELS
350, 352, 353, 355

TRADE NAME	Bulova Models 350, 352, 353, 355
MANUFACTURER	Bulova Watch Co., Bulova Park, Flushing 70, N. Y.
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	105 — 120 Volts AC-DC
TUNING RANGE—BROADCAST	540—1600KC RATING 25 Watts, .25 Amp. @117 Volts AC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

A5, A6.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1600KC	1600KC	"	A5	"
3.	"	1400KC	1400KC Signal.	"	A6	"

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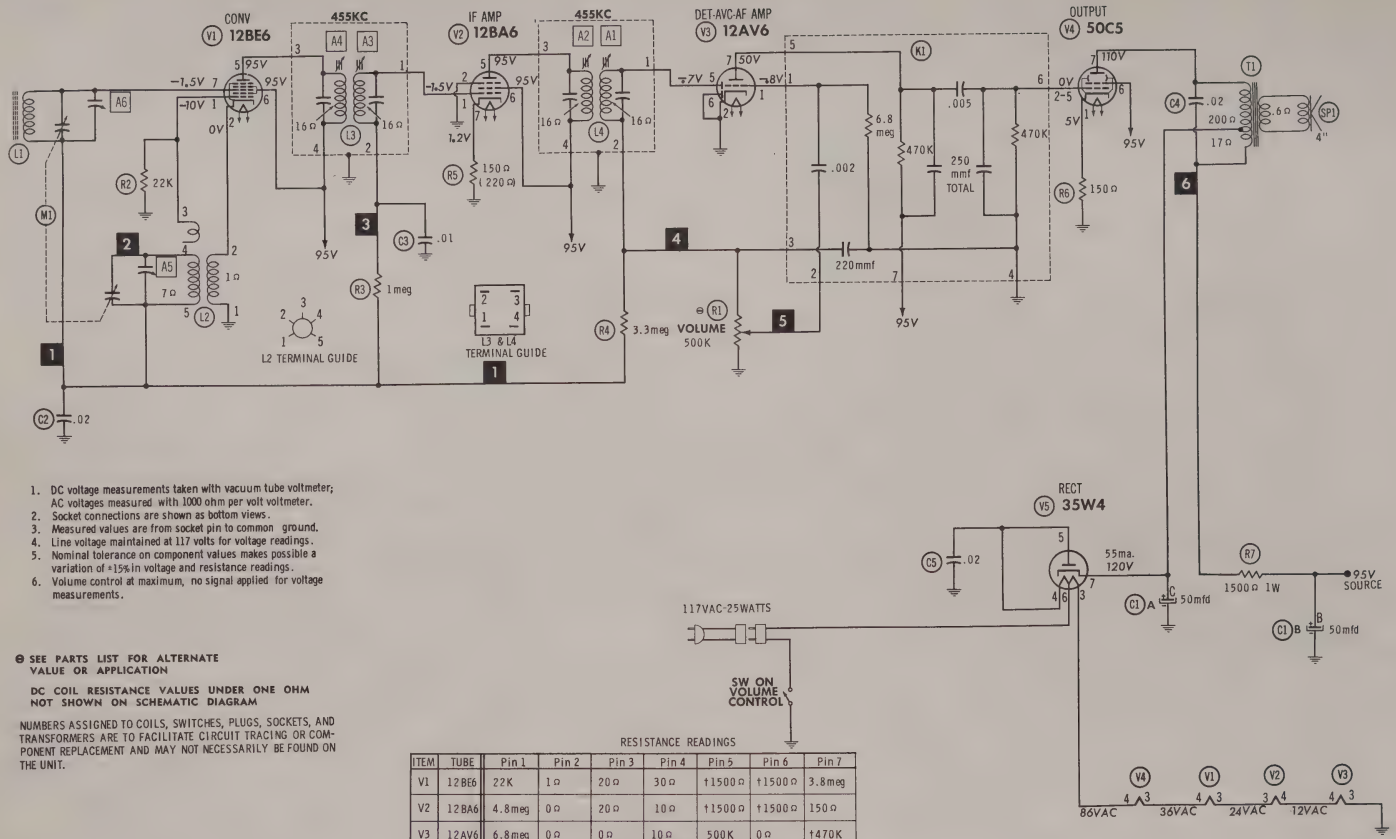

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1Ω	20Ω	30Ω	†1500Ω	†1500Ω	3.8meg
V2	12BA6	4.8meg	0Ω	20Ω	10Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8meg	0Ω	0Ω	10Ω	500K	0Ω	†470K
V4	50C5	150Ω	470K	30Ω	80Ω	NC	†1500Ω	†200Ω
V5	35W4	NC	NC	80Ω	123Ω	123Ω	120Ω	¶ INF

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION

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BULOVA MODELS 350, 352, 353, 355

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BULOVA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	C50	150	10-8	PR2-035	BBRD5515	QT2-9	PWD221	CDB-D50-150 CN	TVA-2453
B	B50	150							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.02 400V		P288N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C3	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C5	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			BULOVA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch (Off-On)	500K	22-18 ①			(BU12, CF16, SS1, GC) †	P2-55A-S

① Some versions may use Part #22-6.
† "SNAPTROL"

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K				R5	150Ω			(220Ω)*
R3	1meg				R6	150Ω			
R4	3.3meg				R7	1500Ω 1W			

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BULOVA PART No.	REPLACEMENT DATA	
C1	Audio Coupling	220mmf, 250mmf, .002mfd, .005mfd, 470K, 470K, 6.8meg	16-4	Aerovox	PA-511-2
				Centralab	PC-157
				Mallory	MS-106 (Note 1)
				Sprague	DT-4

Note 1. Reverse Lead 5 & 6.

PRINTED BOARD

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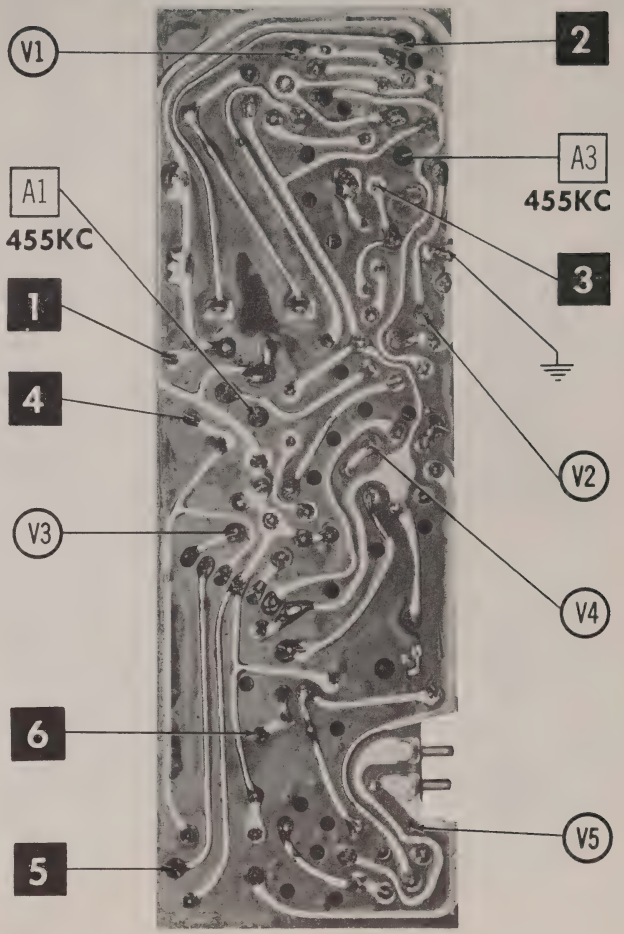
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BULOVA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	20-6					
L2	Osc.	24-9	BC-356	13-PC 9	RTC-8641	T614	
L3	Input IF	24-9	BC-357	13-PC10	RTC-8642	T615	
L4	Output IF						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BULOVA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω Tap @ 8%	3-4Ω	(Part of SP1)				S-16X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BULOVA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	26-7 *	4A1	* Includes T1

MISCELLANEOUS

ITEM No.	PART NAME	BULOVA PART No.	NOTES
M1	Tuning Cap.	12-6	2 Gang

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

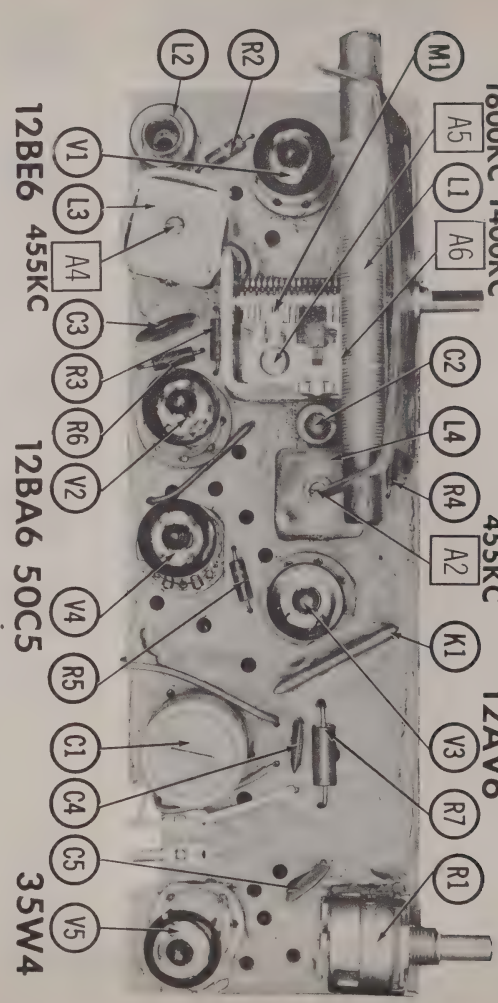
NAME	PART NO.	DESCRIPTION
Knob	78-52B	Tuning
Knob	78-53B	Volume
Cabinet	70-82	(Specify Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

**CHANNEL MASTER
MODEL 6516**

CHANNEL MASTER
MODEL 6516

CHANNEL MASTER
MODEL 6516

TRADE NAME	Channel Master Model 6515
SUPPLIER	Channel Master Corp., Ellenville, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	8MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC
	20MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

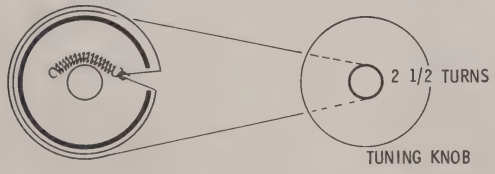
Suggested Alignment Tools:

A3, A6.....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537

A4, A5.....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	1600KC	"	"	A4, A5	"
3.	"	600KC	"	"	A6	Adjust for maximum output. Repeat Steps 2 and 3.

DRIVE CORD STRINGING



FRONT VIEW

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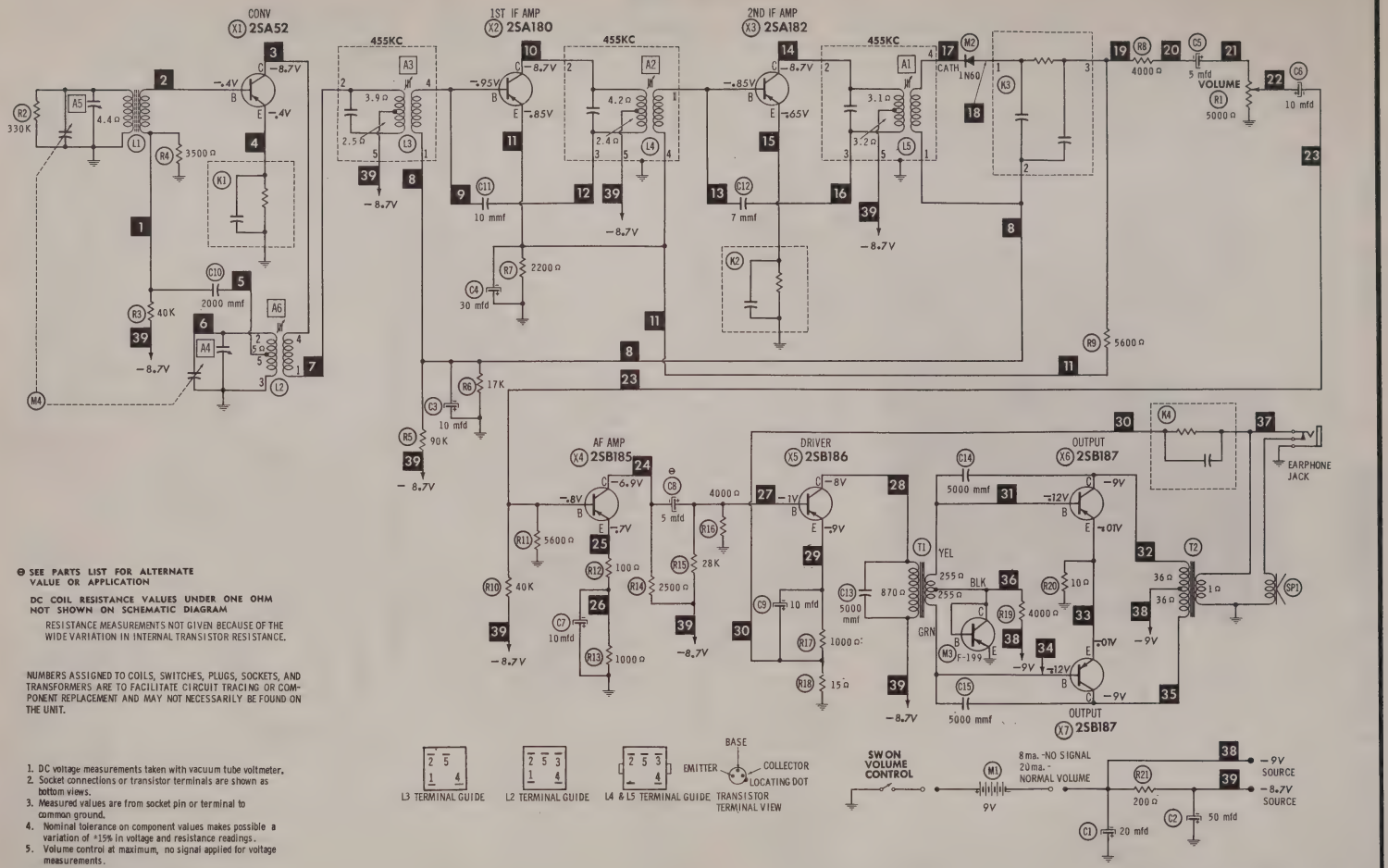

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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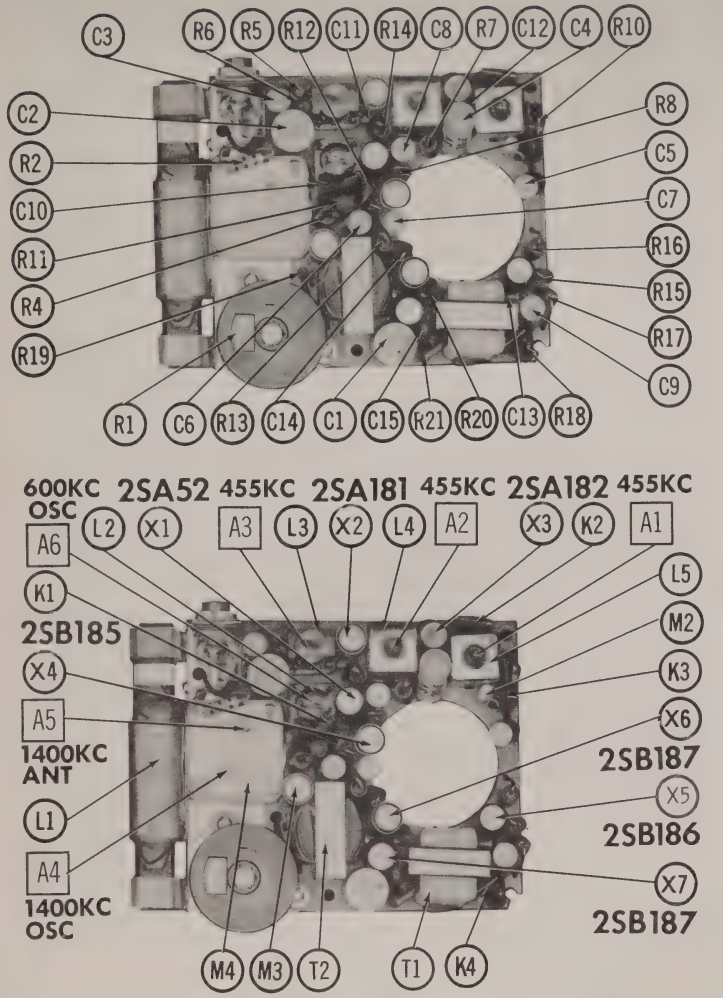
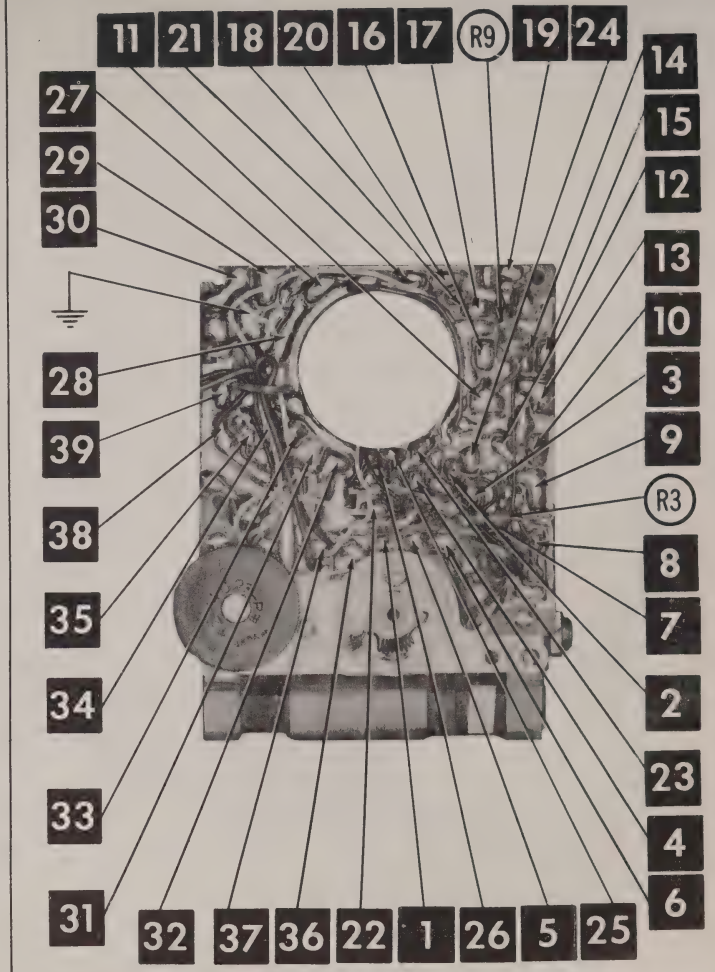
CHANNEL MASTER MODEL 6516



PRINTED BOARD-TOP VIEW



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2SA52	Converter	2N412	2N486	PNP
X2	2SA180	1st IF Amplifier			PNP
X3	2SA182	2nd IF Amplifier			PNP
X4	2SB185	AF Amplifier			PNP
X5	2SB186	Driver			PNP
X6	2SB187	Output			PNP
X7	2SB187	Output			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Channel Master PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	20	9	A011	BCD12020	MLW20-15	MT1-10	TT15X20	MLV20-12	TE-1130
C2	50	9	A031		NLW50-15	MT1-16	TT10X50	MLV50-10	TE-1119
C3	10	3	A038		NLW10-6	MT1-5	TT3X10	MLV10-3	TE-1053
C4	30	3	A046		NLW30-6	MT1-13	TT6X30	MLV30-6	TE-1092
C5	5	6	A010		NLW5-15	MT1-3	TT6X5	MLV5-6	TE-1084
C6	10	3	A038		NLW10-6	MT1-5	TT3X10	MLV10-3	TE-1053
C7	10	3	A038		NLW10-6	MT1-5	TT3X10	MLV10-3	TE-1053
C8	5	6	A010 ①		NLW5-15	MT1-3	TT6X5	MLV5-6	TE-1084
C9	10	3	A038		NLW10-6	MT1-5	TT3X10	MLV10-3	TE-1053

① Some versions may use 3 volt unit in this application (Part #A063).

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.002		BPD-002	DM-202	BYA10D2	CCD-202	GP220	5HK-D20
C11	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C12	7		DI-6.8	DD-6R8	L10V7	CCTO-6R8	GP568	10TS-V68
C13	.005		BPD-005	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C14	.005		BPD-005	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C15	.005		BPD-005	DM-502	H-05D5	CCD-502	TA-250	TG-D50

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA				
			Channel Master PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch	5000Ω	E008				

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	330K				R12	100Ω			
R3	40K				R13	1000Ω			
R4	3500Ω				R14	2500Ω			
R5	90K				R15	28K			
R6	17K				R16	4000Ω			
R7	2200Ω				R17	1000Ω			
R8	4000Ω				R18	15Ω			
R9	5600Ω				R19	4000Ω			
R10	40K				R20	10Ω			
R11	5600Ω				R21	200Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Channel Master PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	E028					
L2	Osc.	F198					
L3	1st IF	C052					
L4	2nd IF	C053					
L5	3rd IF	C054					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.2	1	C050					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	500Ω CT	6-8Ω	C051			TR-102		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Channel Master PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω	G098	22A06Z8	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Channel Master PART No.	REPLACEMENT DATA
K1	Converter Emitter		A064	
K2	2nd IF Emitter		A065	
K3	Diode Filter		A066	
K4	Feedback		A067	

BATTERIES

ITEM No.	VOLTAGE	Channel Master PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	006P		2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Channel Master PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	1N60	F136		1N60	Detector
M3	F199				Output Bias

MISCELLANEOUS

ITEM No.	PART NAME	Channel Master PART No.	NOTES
M4	Tuning Cap.	A044	2 Gang
	Earphone	E003	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	F039	Tuning
Knob	F040	Volume
Cabinet	G023	Black
Cabinet	G024	Red
Case	F073	Leather Carrying, With Strap
Case	F074	Leather, Earphone

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder with CIRCUITRACE®

COLUMBIA
MODEL C1221

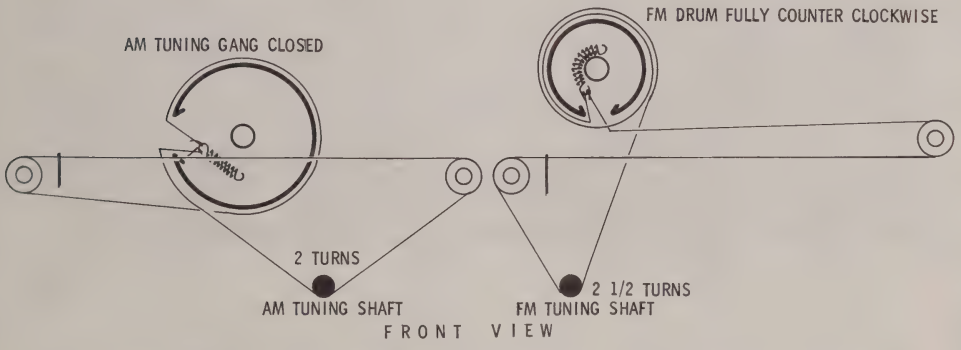
COLUMBIA
MODEL C1221

COLUMBIA
MODEL C1221

TRADE NAME	Columbia Model C1221
MANUFACTURER	Columbia Phonographs, Dept. of CBS Electronics, 405 Park Ave., New York, N. Y.
TYPE SET	AC Operated 8 Tube FM-AM Receiver with Stereo Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 59 Watts, .61 Amp. @117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	540 – 1600KC FREQ. MOD. 88 – 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE GLASER-STEERS GS-77 (REVISED) – PHOTOFACT SET 482 FOLDER 11.

DIAL CORD STRINGING



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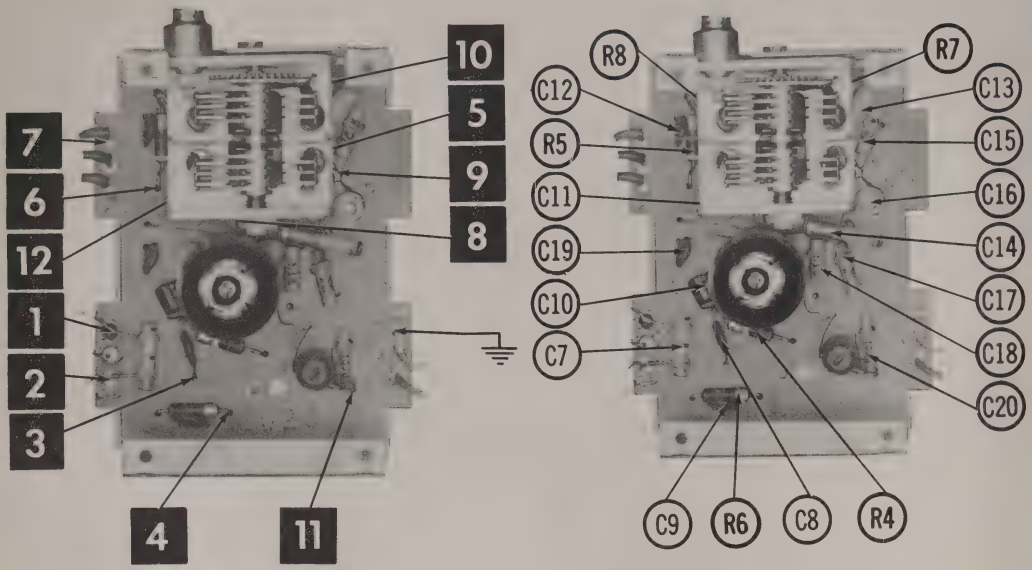
KN950

SET 569 FOLDER 7



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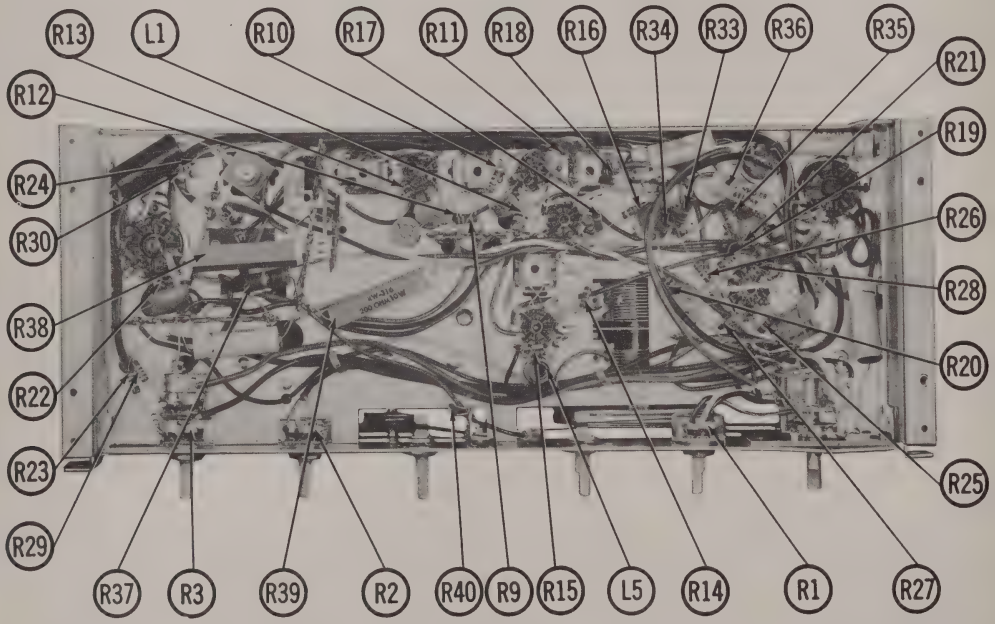
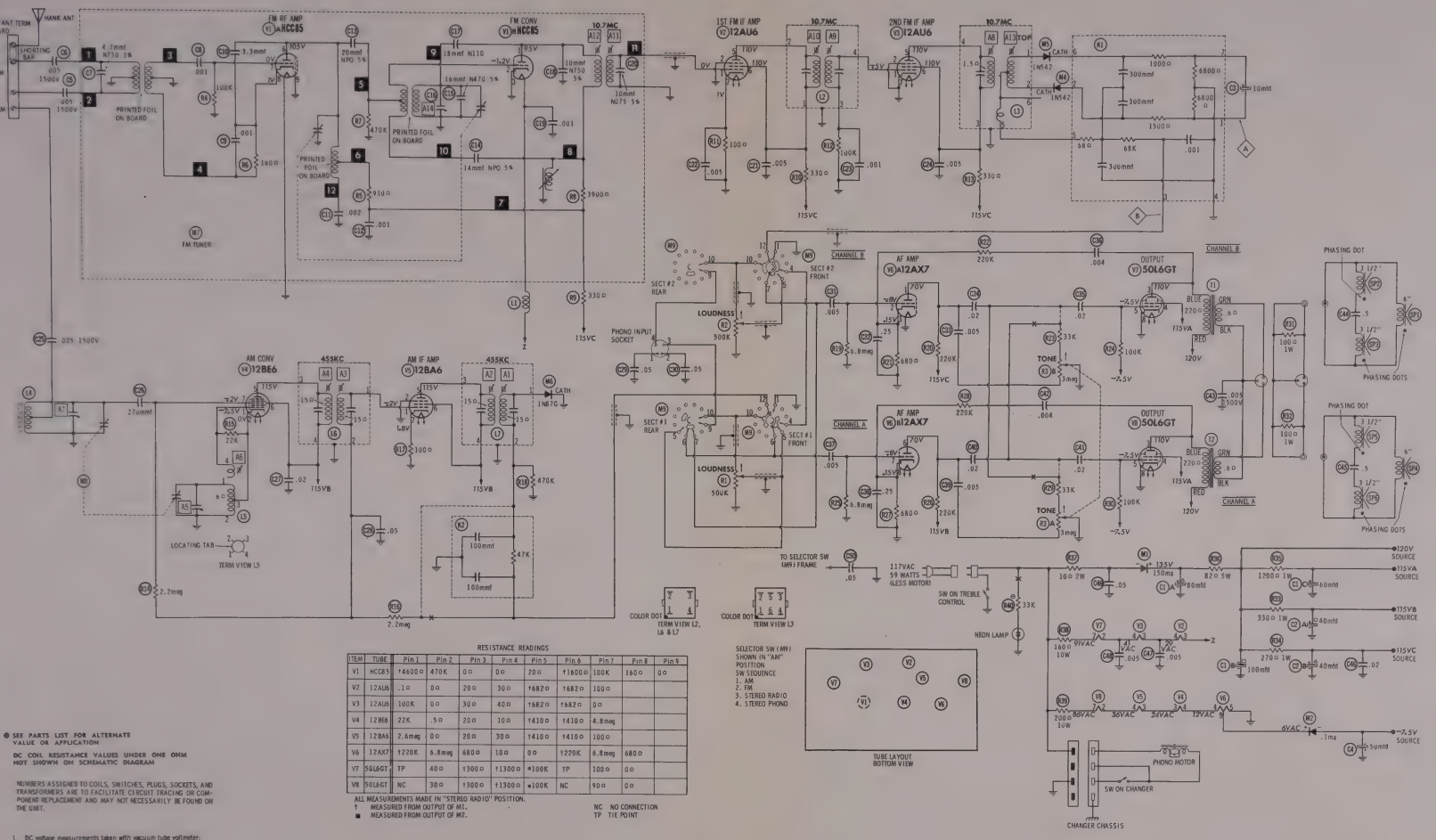
FM RF SUBCHASSIS



CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	HCC85	†4600Ω	470K	0Ω	0Ω	20Ω	†1600Ω	100K	160Ω	0Ω
V2	12AU6	.1Ω	0Ω	20Ω	30Ω	†682Ω	†682Ω	100Ω		
V3	12AU6	100K	0Ω	30Ω	40Ω	†682Ω	†682Ω	0Ω		
V4	12BE6	22K	.5Ω	20Ω	10Ω	†410Ω	†410Ω	4.8meg		
V5	12BA6	2.6meg	0Ω	20Ω	30Ω	†410Ω	†410Ω	100Ω		
V6	12AX7	†220K	6.8meg	680Ω	10Ω	0Ω	†220K	6.8meg	680Ω	
V7	50L6GT	TP	40Ω	†300Ω	†1300Ω	■100K	TP	100Ω	0Ω	
V8	50L6GT	NC	30Ω	†300Ω	†1300Ω	■100K	NC	90Ω	0Ω	

ALL MEASUREMENTS MADE IN "STEREO RADIO" POSITION.
† MEASURED FROM OUTPUT OF M1.
■ MEASURED FROM OUTPUT OF M2.

NC NO CONNECTION
TP TIE POINT

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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COLUMBIA MODEL C1221

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools:

A1 thru A4, A8, A9, A10, A13...GENERAL CEMENT #8607, 9291, 9294
WALSCO #2515
A5, A7, A14.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A11, A12..... GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ 30% AM).	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1400KC	1400KC	"	A5	"
3.	"	600KC	600KC	"	A6	"
4.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1400KC	1400KC Signal.	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side to an ungrounded tube shield over FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (A). Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (B). Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side to an ungrounded tube shield over FM Converter. Low side to chassis.	10.7MC	(FM) Point of non-interference.	Vert. amp. to point (A). Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing Capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
6.	"	"	"	Vert. amp. to point (B). Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru 270Ω to FM antenna terminals. Low side to chassis.	92MC (Unmod.)	(FM) 92MC	DC probe to point (A). Common to chassis.	A14	Adjust for maximum output.

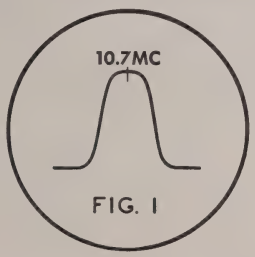


FIG. 1

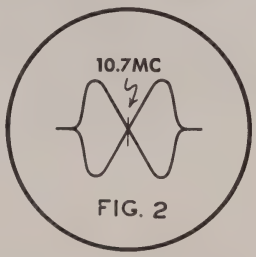
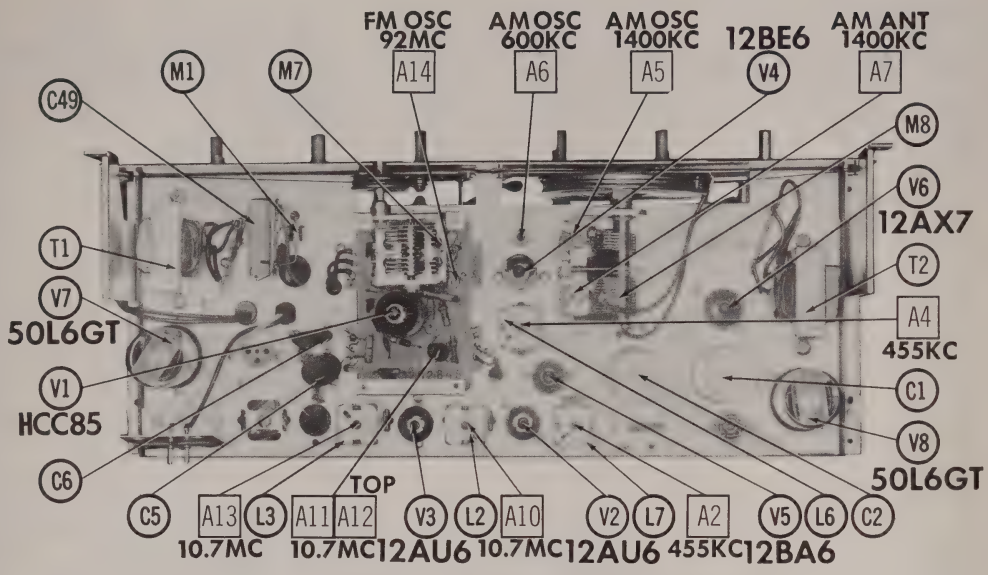
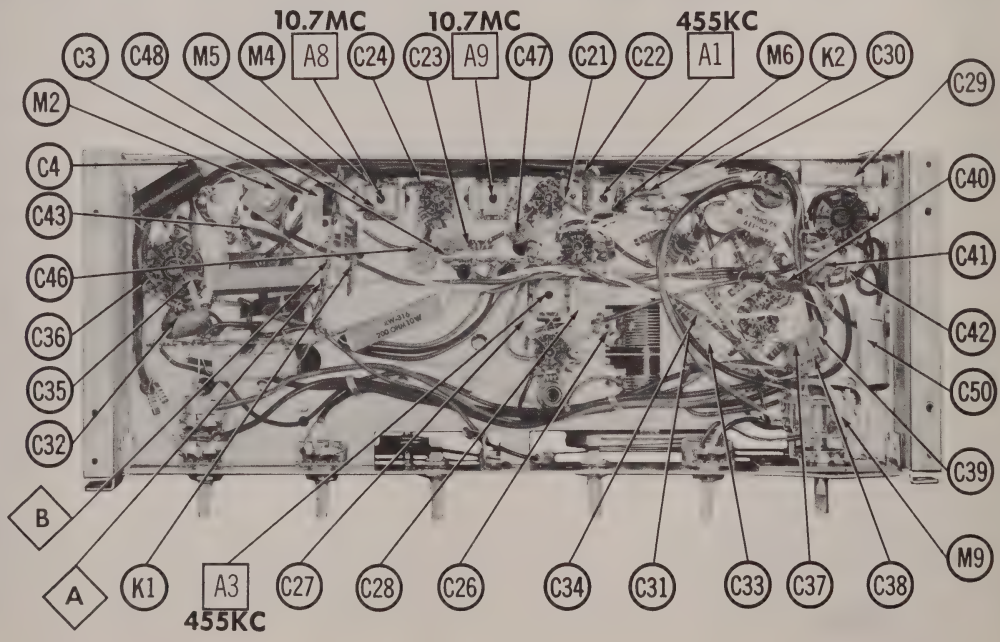


FIG. 2



CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-ALIGN, CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	HCC85
V2	1st FM IF Amplifier	12AU6
V3	2nd FM IF Amplifier	12AU6
V4	AM Converter	12BE6
V5	AM IF Amplifier	12BA6
V5	AM IF Amplifier	12BA6
V6	Channel A AF Amplifier-Channel B AF Amplifier	12AX7
V7	Channel A Output	50L6GT
V8	Channel B Output	50L6GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▲80	160		PWH3-13-70	B0170		FP216.6	TMD-2130	TVL-2440
B	▲100	160			BR10035		TC1265	TD-100-200	TVA-1420
C	60	160							
C2A	▲40	160		AFH2-14	XB0254	XC2-24	FP221	TMD-2250	TVL-2460
B	▲40	160							
C3	10	50	11B774	PTT92	NLW10-50	MT1-16	TC32	MLV10-50	TE-1304
C4	50	50		PRSI350	BR505	QT1-15	TC39	TD-50-50	TVA-1308

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.005 1500V		HVD-15-4700	DD30-502	HVE16D5	3CCD-502	UAC-250	BL-D50
C6	.005 1500V		HVD-15-4700	DD30-502	HVE16D5	3CCD-502	UAC-250	BL-D50
C7	4.7 N750 5%			TCZ-5	C10V5C	CCTN-050	CN7-547	10TCU-V47
C8	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	3.3		NPO-DI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C11	.002		SI 2000	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C12	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	20 NPO 5%		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-420	10TCC-Q20
C14	14 NPO 5%		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C15	16 N470 5%					*		
C16								
C17	18 N110					*		
C18	10 N750 5%		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C19	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C20	10 N075 5%					*		
C21	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C23	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C24	.005		BPD-005	DD-502	BYA10D1	CCD-502	B-250	5HK-D50
C25	.005 1500V		HVD-15-4700	DD30-502	HVE16D5	3CCD-502	UAC-250	BL-D50
C26	270		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C27	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C28	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-215	2TM-S50
C29	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C30	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C31	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C32	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C33	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C34	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C35	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C36	.004		BPD-004	DD-402	BYA10D4	CCD-392	B-240	5HK-D40
C37	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C38	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C39	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-S20
C40	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C41	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C42	.004		BPD-004	DD-402	BYB6D4	CCD-392	B-240	5HK-D40
C43	.005 1500V		HVD-15-4700	DD30-502	HVE16D5	3CCD-502	UAC-250	BL-D50
C44	.5 200V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P50
C45	.5 200V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C47	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C48	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C49	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C50	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3meg	½	9B657	B-85	A47-3meg-Z	Q13-140	U57	Loudness, Channel A
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	3meg	½	9B657	B-85	A47-3meg-Z	Q13-140	U57	Loudness, Channel B
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	9B656	B-60	AD47-500K-Z		FA55A	Tone, Channel A
B	500K			SR-60	Not Req.		RU55A	Tone, Channel B
C	Shaft			Not Req.	FS-3		CS3500	
D	Switch			KR-1	SWE-12		US41	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R4	100K			
R5	910Ω			
R6	160Ω			
R7	470K			
R8	3900Ω			
R9	330Ω			
R10	330Ω			
R11	100Ω			
R12	100K			
R13	330Ω			
R14	2.2meg			
R15	22K			
R16	2.2meg			
R17	100Ω			
R18	470K			
R19	6.8meg			
R20	220K			
R21	680Ω			
R22	220K			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R23	33K			
R24	100K			
R25	6.8meg			
R26	220K			
R27	680Ω			
R28	220K			
R29	33K			
R30	100K			
R31	100Ω 1W			
R32	100Ω 1W			
R33	330Ω 1W			
R34	270Ω 1W			
R35	1200Ω 1W			
R36	82Ω 5W	PW5-82	5W-SQ-82	
R37	10Ω 2W			
R38	160Ω 10W	PW10-160	10W-SQ-160	
R39	200Ω 10W	PW10-200	10W-SQ-200	
R40	33K		Note 1	

Note 1. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	COLUMBIA PART No.	REPLACEMENT DATA
K1	Ratio Detector Network	300mmf, 300mmf, 300mmf, .001mfd, 68Ω, 1000Ω, 1500Ω, 68000Ω, 68000Ω, 68K	5B318	Aerovox PA-694 Centralab PC-342 Sprague C-12
K2	AM Diode Filter	100mmf, 100mmf, 47K	5B317	Aerovox PA-97 Centralab PC-50 Sprague D-1

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		COLUMBIA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Fil. Choke(1uh)	20B407 ①	BC-561	4602	RTC-8515	T855	① IRC Part #CLA
L2	2nd FM IF	20B413	FM-254	1463	RTC-8599	T633	
L3	Ratio Detector	20B412	FM-255	1465	RTC-8600	T635	
L4	Loopstick	20B406	BC-419	705-A		T532	
L5	AM Osc.	20B408	BC-393	69-OSC	RTC-8646	T504	
L6	1st AM IF	20B411	BC-352	$12\text{-}C_9$	RTC-8632	T607	
L7	2nd AM IF	20B411	BC-353	$12\text{-}C_{10}$	RTC-8633	T608	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	3-4Ω	3B266	A-2928	A-3876	24S50	S-1X	
T2	2500Ω	3-4Ω	3B266	A-2928	A-3876	24S50	S-1X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	COLUMBIA PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	1B108	6A21	
SP2	3½"	PM	3-4Ω	1B153	3A07	
SP3	3½"	PM	3-4Ω	1B153	3A07	
SP4	6"	PM	3-4Ω	1B108	6A21	
SP5	3½"	PM	3-4Ω	1B153	3A07	
SP6	3½"	PM	3-4Ω	1B153	3A07	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT (Measured)	COLUMBIA PART No.	RCA PART No.	SARKES TARZIAN PART No.	
M1	.150A	*	1N1763 *	40H *	* Silicon † Selenium
M2	.000lA	†	1N1763 *	65 †	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	COLUMBIA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M3	P-106 SC-7D ①		86TS	N8-7* & N8-3*	96T	Not Req.	12TH-S	N-12TH-S *	① Alternate.

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		COLUMBIA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M4	1N542	20B410		1N295	Discriminator (Matched Pair)
M5	1N542	20B410		1N295	
M6	1N876	20B409		1N876	AM Detector

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M7	FM Tuner	TN-27	Complete
M8	Tuning Cap.	14B119	2 Gang (Ant. 21-484mmf, Osc. 8-160mmf)
M9	Switch	19B763	Function Selector (Rotary Wafer Type)

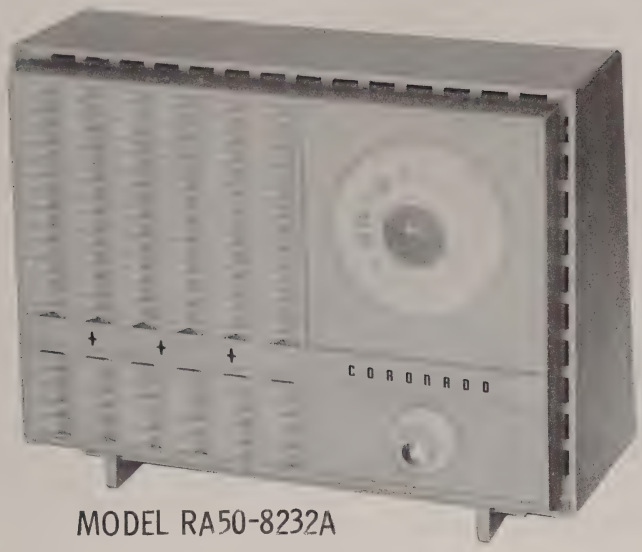
WIRING DATA

General-use Unshielded Hook-up Wire.....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type) ..... Use BELDEN No. 8874
Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401
Phono Pick-up Arm Cable .....Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

**CORONADO MODELS
RA50-8231A, RA50-8232A**

CORONADO MODELS
RA50-8231A, RA50-8232A



MODEL RA50-8232A

CORONADO MODELS
RA50-8231A, RA50-8232A

TRADE NAME	Coronado Models RA50-8231A, RA50-8232A
SUPPLIER	Gamble-Skogmo, Inc., 15 N. Eighth Street, Minneapolis 3, Minn.
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	110 — 120 Volts AC-DC RATING 26 Watts, .26 Amp. @117 Volts AC
TUNING RANGE —BROADCAST	540 — 1640KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4... GENERAL CEMENT #5097, 8727
WALSCO #2515

A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1640KC	"	"	A5	"
3.	"	1400KC	1400KC Signal.	"	A6	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KG951

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det. -AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	50	150	E3233A	PRS2200	BBRD5315	QT2-7	TCD497	TDLD-8	TVA-2450
B	30	150							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C3	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C4	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C5	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch (Off-On)	500K	E2551A	B-60-S or (AB-60, AK-7, KR-1)	A47-500K-Z/FS-3, SWE-12	Q13-133, 76-1, or (BU1, CF25, SS1, GC) †	U48, US-26

† "SNAPTROL"

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

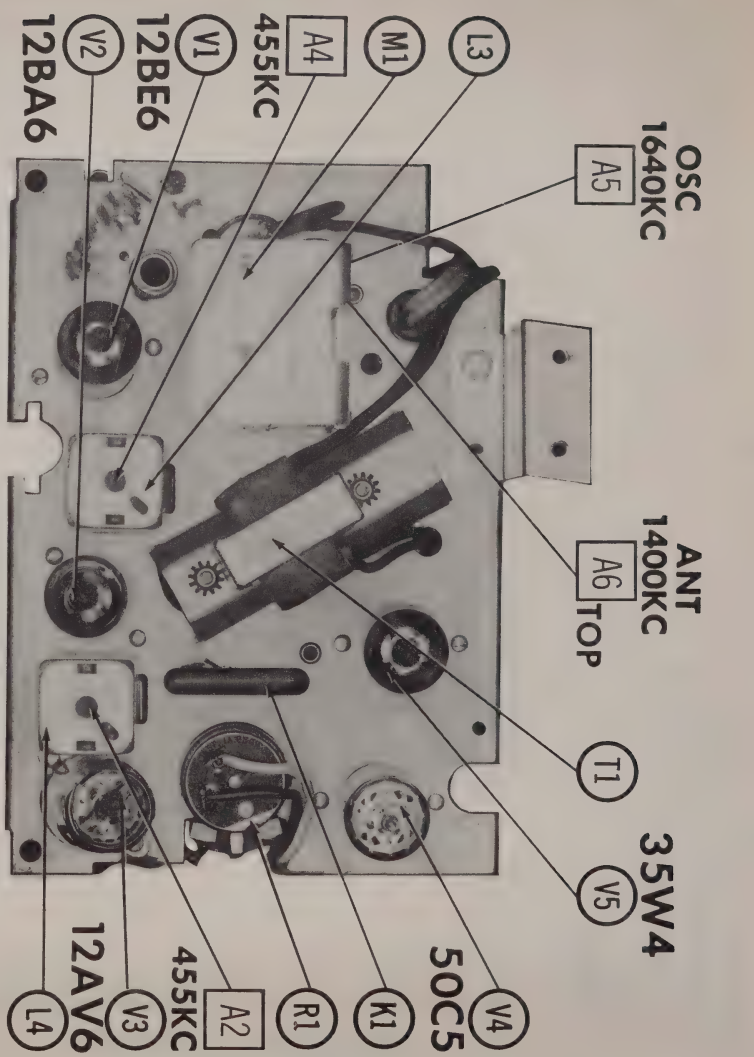
ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3.3meg				R5	150Ω			
R3	22K				R6	1500Ω 1W			
R4	100Ω			(150Ω)*					

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA	
K1	Audio Coupling	220mmf, 250mmf, .002mfd, .005mfd, 470K, 470K, 6.8meg		Aerovox	PA-113-1
				Centralab	PC-150
				Mallory	MS-106
				Sprague	DT-1

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		CORONADO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loop Ant.	E6031B					
L2	Osc.	E6142A	BC-393	69-OSC	RTC-8646	T504	
L3	Input IF	E6256-1	BC-352	12-C9	RTC-8632	T607	
L4	Output IF	E6256-2	BC-353	12-C10	RTC-8633	T608	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CORONADO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3000Ω	3-4Ω	E1127B	A-3025①	A-3332①	26S58	S-12Z	① Drill New Mtg. Hole(s)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	E1035B	4A05	

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	Tuning Cap.	E3527B	2 Gang (Ant. 36—345mmf, Osc. 14—105mmf)

CABINETS & CABINET PARTS

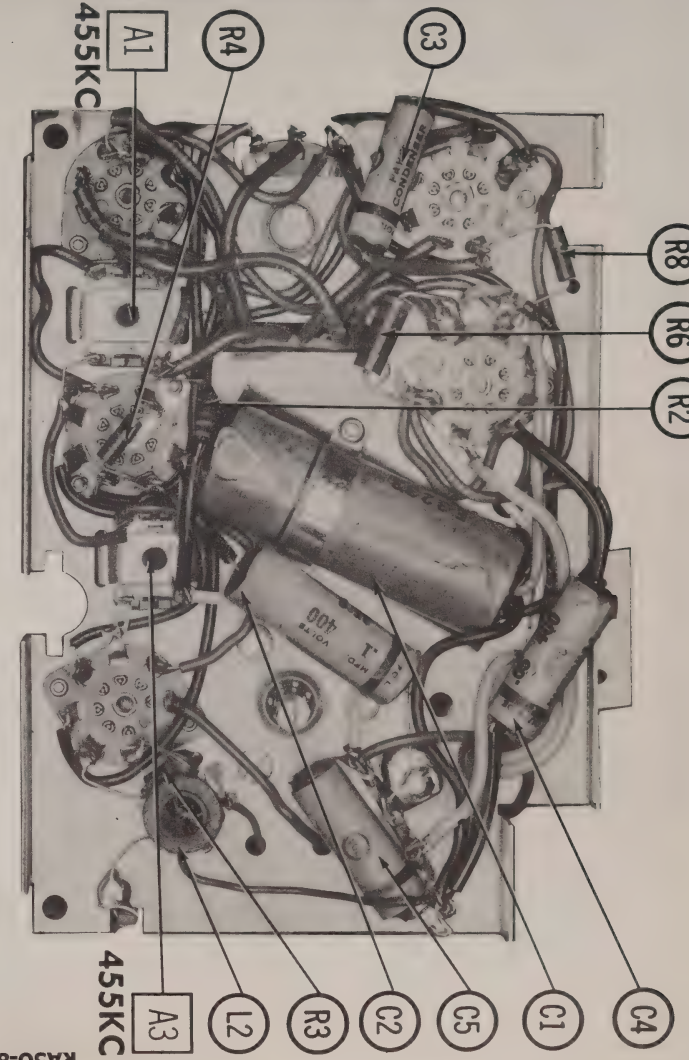
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

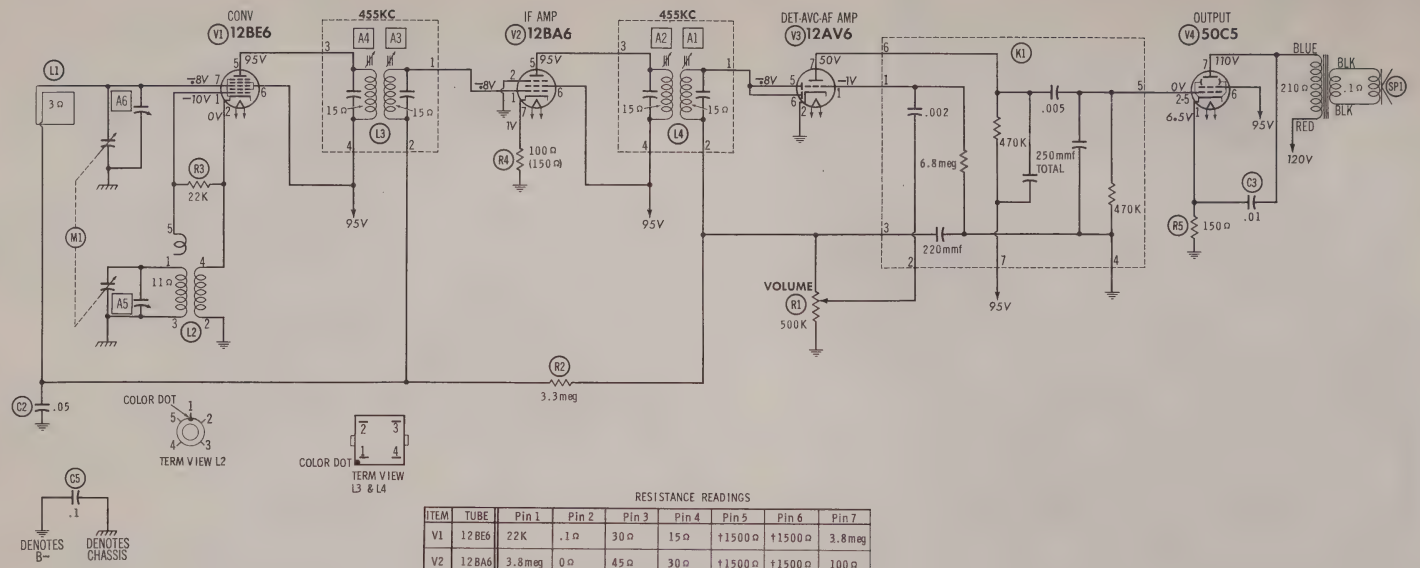
NAME	PART NO.	DESCRIPTION
Knob	E50125C	Tuning
Knob	E50128C	Volume
Cabinet	E70139D	White, Model RA50-8231A
Cabinet	E70140D	Beige, Model RA50-8232A

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW

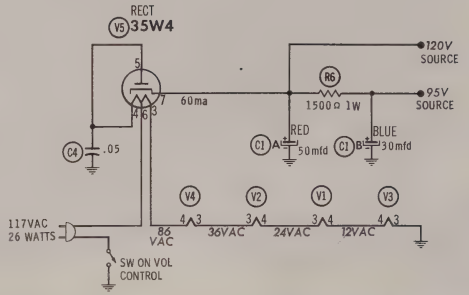




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.1Ω	30Ω	15Ω	†1500Ω	†1500Ω	3.8meg
V2	12BA6	3.8meg	0Ω	45Ω	30Ω	†1500Ω	†1500Ω	100Ω
V3	12AV6	6.8meg	0Ω	0Ω	15Ω	500K	500K	†470K
V4	50C5	150Ω	470K	45Ω	100Ω	NC	†1500Ω	†210Ω
V5	35W4	TP	TP	100Ω	143Ω	143Ω	140Ω	¶ INF

† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION TP TIE POINT
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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CORONADO MODELS
RA50-8231A, RA50-8232A

PHOTOFACT® Folder

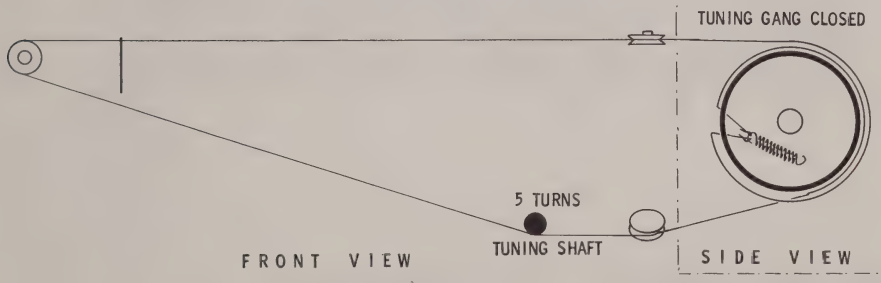
**DELMONICO
MODEL 88**

DELMONICO
MODEL 88

DELMONICO
MODEL 88

TRADE NAME	Delmonico Model 88
IMPORTER	Delmonico International, Div. of Thompson-Starrett Co., Inc., 120-20 Roosevelt Ave., Corona 68, N. Y.
TYPE SET	AC-DC Operated 7 Tube FM-AM Receiver
POWER SUPPLY	110 — 120 Volts AC-DC RATING 28 Watts, .3 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535 — 1605KC FREQ. MOD. 88 — 108MC

DIAL CORD STRINGING



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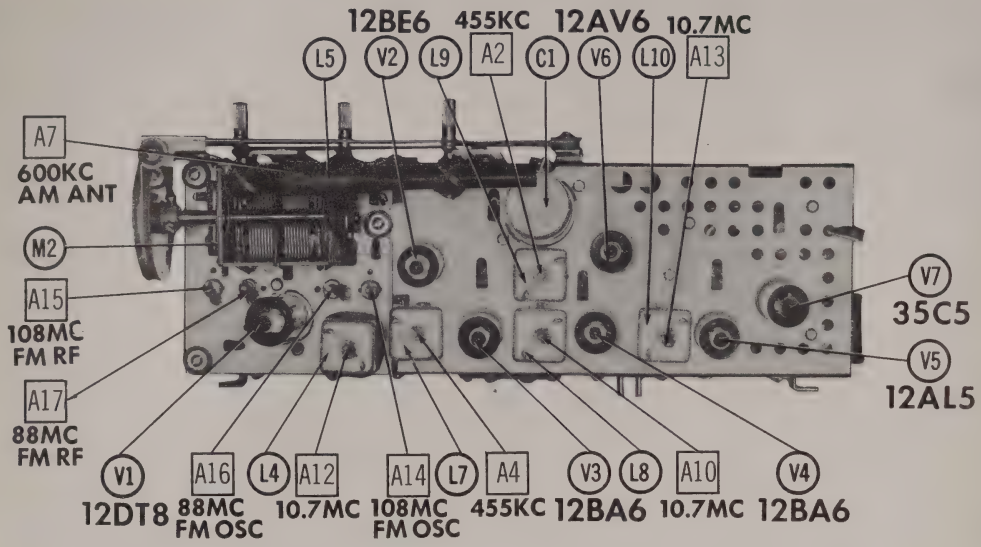
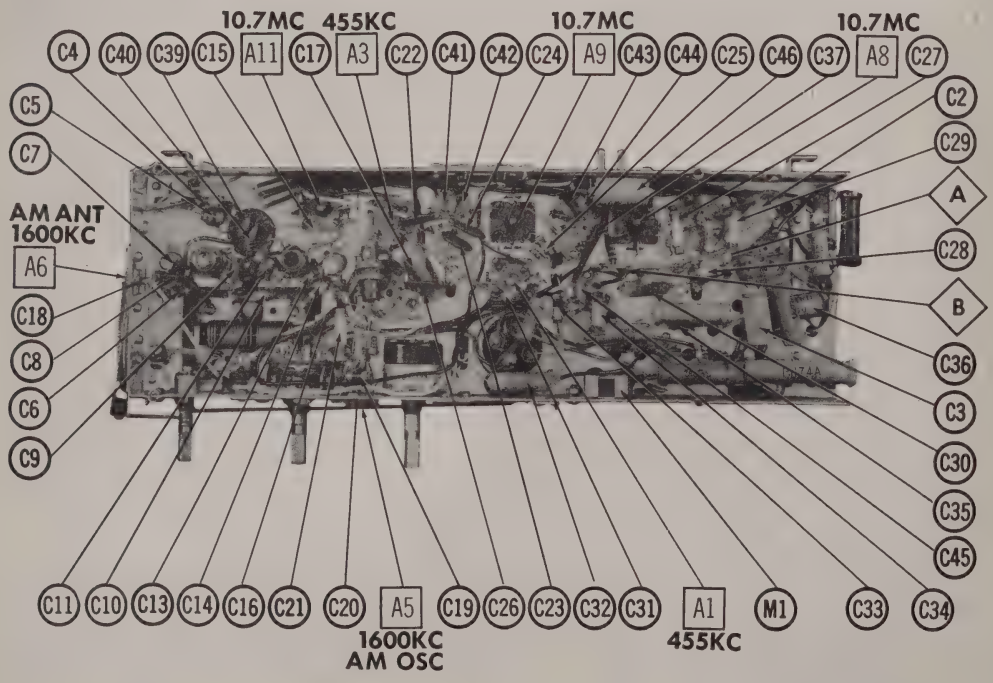
KK979

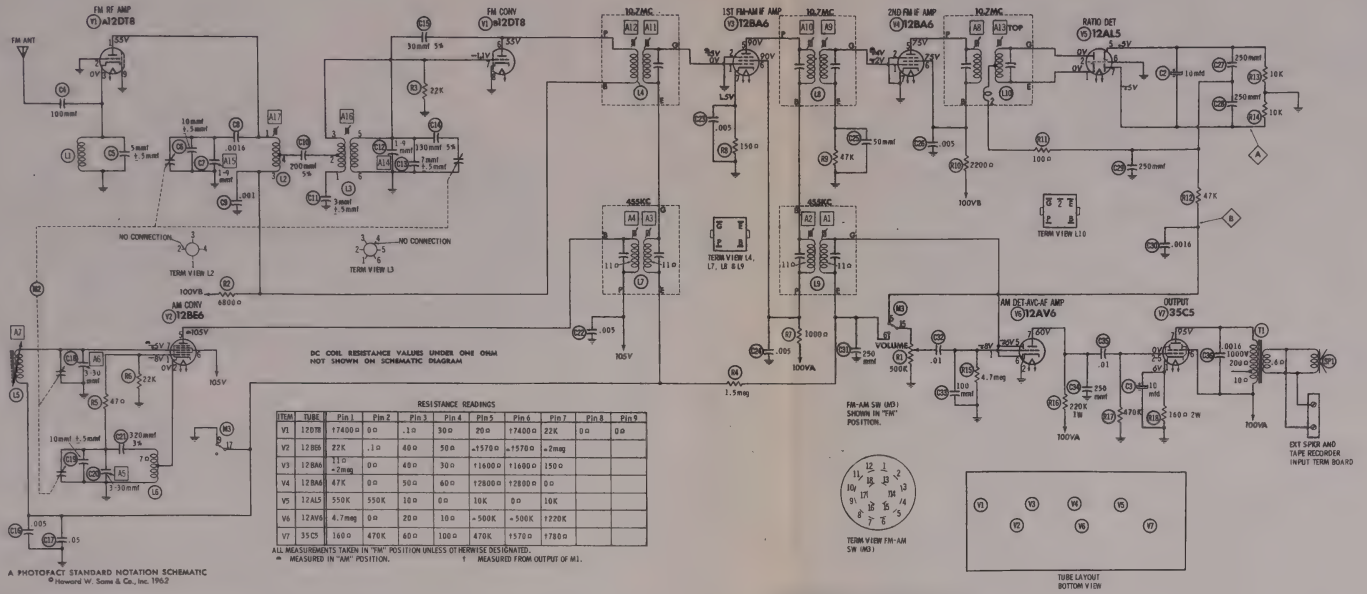
SET 569 FOLDER 9



CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-ALIGN., CAPACITOR & MISC. IDENT.


FM RF AMP V1) A12DT8
FM CONV V1) al2DT8
10.7MC
1ST FM-AM IF AMP V3) 12BA6
2ND FM IF AMP V4) 12BA6
RATIO DET V5) 12AL5
455KC
AM CONV V7) 12BE6
AM DET-AVC-AF AMP V5) 12AV6
OUTPUT V7) 35C5
FM ANT
NO CONNECTION
TERM VIEW L2
TERM VIEW L3
TERM VIEW L4, L7, L8 & L9
TERM VIEW L10
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
FM-AM SW (M3) SHOWN IN "FM" POSITION.
EXT SPKR AND TAPE RECORDER INPUT TERM BOARD
TERM VIEW FM-AM SW (M3)
TUBE LAYOUT BOTTOM VIEW

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	†7400Ω	0Ω	.1Ω	30Ω	20Ω	†7400Ω	22K	0Ω	0Ω
V2	12BE6	22K	.1Ω	40Ω	50Ω	⁴1570Ω	⁴1570Ω	⁴2meg		
V3	12BA6	1Ω ⁴2meg	0Ω	40Ω	30Ω	†1600Ω	†1600Ω	150Ω		
V4	12BA6	47K	0Ω	50Ω	60Ω	†2800Ω	†2800Ω	0Ω		
V5	12AL5	550K	550K	10Ω	0Ω	10K	0Ω	10K		
V6	12AV6	4.7meg	0Ω	20Ω	10Ω	⁴500K	⁴500K	†220K		
V7	35C5	160Ω	470K	60Ω	100Ω	470K	†570Ω	†780Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
⁴ MEASURED IN "AM" POSITION. † MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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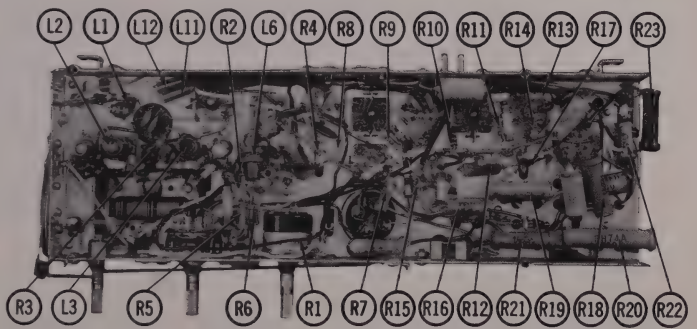
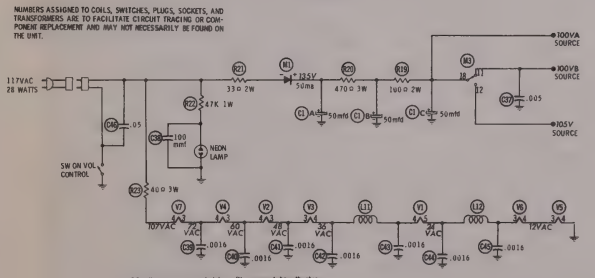


CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.


NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
117VAC 28 WATTS
SW ON VOL. CONTROL
NEON LAMP
100VA SOURCE
100VB SOURCE
105V SOURCE
107VAC
12VAC

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DELMONICO MODEL 88

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4, A8 thru A17 ..GENERAL CEMENT #8721, 8722
WALSCO #2519

A5, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1600KC	1600KC	"	A5, A6	"
3.	"	600KC	600KC Signal.	"	A7	Adjust for maximum output by moving antenna coil turns along ferrite core.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .001mfd to pin 3 (grid) of FM RF Amp. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .001mfd to pin 3 (grid) of FM RF Amp. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
5.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center or crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side to FM antenna terminal thru 270mmf. Low side to chassis.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A14, A15	Adjust for maximum deflection.
7.	"	88MC	88MC	"	A16, A17	Adjust for maximum deflection. Repeat Steps 6 and 7.

FIG. 1

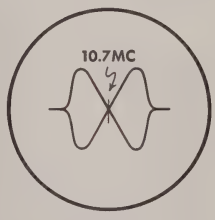


FIG. 2

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	12DT8
V2	AM Converter	12BE6
V3	1st FM IF Amp. - AM IF Amp.	12BA6
V4	2nd FM IF Amplifier	12BA6
V5	Ratio Detector	12AL5
V6	AM Det. -AVC-AF Amp.	12AV6
V7	Output	35C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELMONICO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	50	150		AFH3-11-50	XC0105	XC3-44	FP311.65	TMT-3133	TVL-3442
B	50	150							
C	50	150							
C2	10	50		PTT92	NLW10-50	MT1-6	TT50X10	MLV50-10	TE-1304
C3	10	50		PTT92	NLW10-50	MT1-6	TT50X10	MLV50-10	TE-1304

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C5	5 +.5mmf		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-550	10TCC-V50
C6	10 +.5mmf		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C7	1-9							
C8	.0016		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C9	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	200 5%			TCZ-200	22R5T2	CM-19B-201J		
C11	3 +.5mmf		NPO-SI 3.0	TCZ-3R3	C10V3C	CCTO-3R3	CNO-433	10TCC-V33
C12	1-9							
C13	7 +.5mmf		NPO-SI 6.8	TCZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C14	130 5%			TCZ-130	22R5T13	CM-19B-131J	CNO-312	MS-313
C15	30 5%			TCZ-30	C10Q3C	CCTO-300	CNO-433	10TCC-Q30
C16	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	.05 200V		P288N-05	DD-502	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C18	3-30							
C19	10 +.5mmf		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C20	3-30							
C21	320 3%							
C22	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C23	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C24	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	50		DI-50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C26	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	250		DI-250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C28	250		DI-250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C29	250		DI-250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C30	.0016 200V		P288N-0015	D6-152	CUB6D15	6DP-1-152	GEM-6215	6TM-D15
C31	250		DI-250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C32	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C33	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C34	250		DI-250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C35	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C36	.0016 1000V		P1088N-0015	DD-152	CUB10D15	16DP-2-152	GEM-10215	10TM-D15
C37	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C38	100		DI-100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C39	.0016		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C40	.0016		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C41	.0016		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C42	.0016		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C43	.0016		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C44	.0016		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C45	.0016		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C46	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			DELMONICO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch (Off-On)	500K		B-70, KR-3, or (AB-70, AK-11, KR-3)			

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	6800Ω				R13	10K			
R3	22K				R14	10K			
R4	1.5meg				R15	4.7meg			
R5	47Ω				R16	220K 1W			
R6	22K				R17	470K			
R7	1000Ω				R18	160Ω 2W			
R8	150Ω				R19	100Ω 2W			
R9	47K				R20	470Ω 3W	PW3-470	3W-SQ-470	
R10	2200Ω				R21	33Ω 2W			
R11	100Ω				R22	47K 1W			
R12	47K				R23	40Ω 3W	PW3-40	3W-SQ-40	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELMONICO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(luh)		BC-561	4602	RTC-8515	T855	
L2	FM RF						
L3	FM Osc.						
L4	1st FM IF		FM-254	1463	RTC-8599	T633	
L5	Loopstick		BC-419	705-A		T532	
L6	AM Osc.		BC-400	5481-C	RTC-9192	T512	
L7	1st AM IF		BC-352	12-C9	RTC-8632	T607	
L8	2nd FM IF		FM-254	1463	RTC-8599	T633	
L9	2nd AM IF		BC-253	12-C10	RTC-8633	T608	
L10	Ratio Detector		FM-255	1465	RTC-8600	T635	
L11	Fil. Choke (luh)		BC-561	4602	RTC-8515	T855	
L12	Fil. Choke(luh)		BC-561	4602	RTC-8515	T855	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELMONICO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω Tap 5% (Tap Not Used)	3-4Ω	03020-1	A-2928	A-3876	24S50	S-16X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELMONICO PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SK-2061-1	4A07	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DELMONICO PART No.	RCA PART No.	SARKES TARZIAN PART No.	
M1	.050A	*	1N1763 †	2F4 †	* Selenium † Silicon

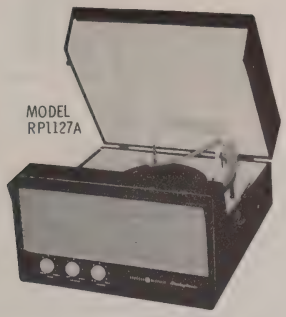
MISCELLANEOUS

ITEM No.	PART NAME	DELMONICO PART No.	NOTES
M2	Tuning Cap.		4 Gang

PHOTOFACT® Folder with CIRCUITRACE®

GENERAL ELECTRIC
MODELS RP1127A, RP1128A

GENERAL ELECTRIC
MODELS RP1127A, RP1128A



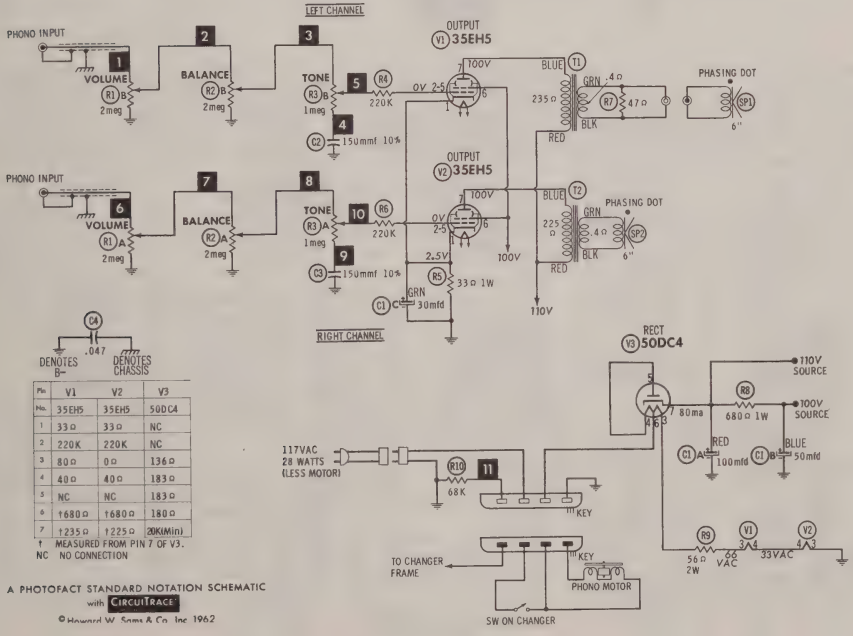
A Howard W. Sams CIRCUITRACE® Photo

TRADE NAME	General Electric Models RP1127A, RP1128A, RP1550A, RP1550D, RP1551A, RP1551D
MANUFACTURER	General Electric Co., Product Service, Audio Products Section, 2200 N. 22nd Street, Decatur, Illinois
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105 — 120 Volts AC, 60 Cycles RATING 28 Watts, .28 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER CH38 (MODEL RP1127A) OR CH39 (MODEL RP1128A) — SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

FOR SERVICE INFORMATION ON RECORD CHANGER CH55 (MODELS RP1550D, RP1551D) — SEE SIMILAR V-M 1223 — PHOTOFACT SET 557 FOLDER 14

MODELS RP1550A AND RP1551A USE RECORD CHANGER CH51



Pin No.	V1	V2	V3
1	33Ω	33Ω	NC
2	220K	220K	NC
3	80Ω	0Ω	136Ω
4	40Ω	40Ω	183Ω
5	NC	NC	183Ω
6	†680Ω	†680Ω	180Ω
7	†235Ω	†225Ω	20K(Min)

† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT935

SET 569 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V1	Left Channel Output	35EH5
V2	Right Channel Output	35EH5
V3	Rectifier	50DC4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA G.E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	100	150	RS2256	PR3-125	BBRQ0385	QT4-2	WT455		TVA-4584
B	50	150							
C	30	25							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C3	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C4	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA G.E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Volume, Right Ch.	2meg	RS2891	B-75, SR-75, or (AB-75, SR-75, AK-7)	AD47-2meg-S/ FS-3		FB26L, RU26L, CS3500
B	Volume, Left Ch.	2meg					
R2A	Balance, Right Ch.	2meg	RS2892				FA26R, RU26A, CS3500
B	Balance, Left Ch.	2meg					
R3A	Tone, Right Channel	1meg	RS3113	B-70, SR-70, or (AB-70, SR-70, AK-7)	AD47-1meg-Z/ FS-3		FB16A, RU16A, CS3500
B	Tone, Left Channel	1meg					

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	220K			
R5	33Ω 1W			
R6	220K			
R7	47Ω			
R8	680Ω 1W			
R9	56Ω 2W			
R10	68K			

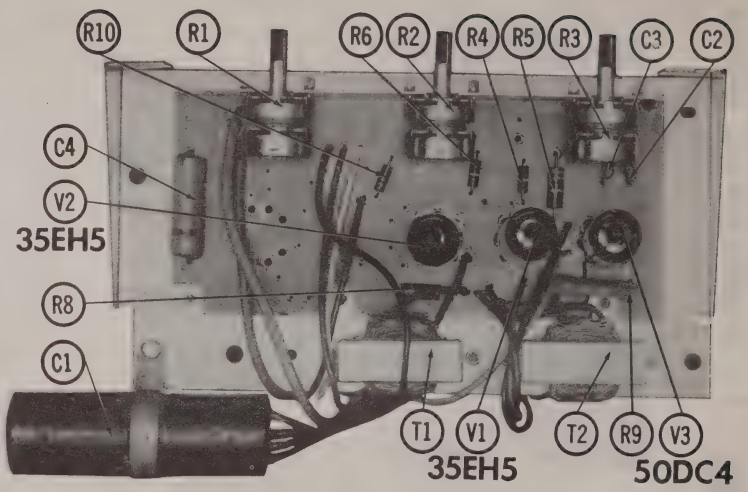
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA G.E. PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3300Ω	3-4Ω	RS3112	A-2903	A-3856	22S45	S-30X	
T2	3300Ω	3-4Ω	RS3111	A-2903	A-3856	22S45	S-30X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA G.E. PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	RBI143	6A1	
SP2	6"	PM	3-4Ω	RBI143	6A1	

CHASSIS—TOP VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	G.E. PART No. CARTRIDGE	G.E. PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M1	RS3109 ♦		70TS	N8-7 * & N8-3 *	96T	Not Req.	12TH-S	N-12TH-S *	♦ Alternate Part # RS3108 Models RP1127A, RP1128A
	RS3480	RS3416 * (LP) RS3417 * (78 RPM)							Models RP1550A, RP1551A, RP1550D, RP1551D

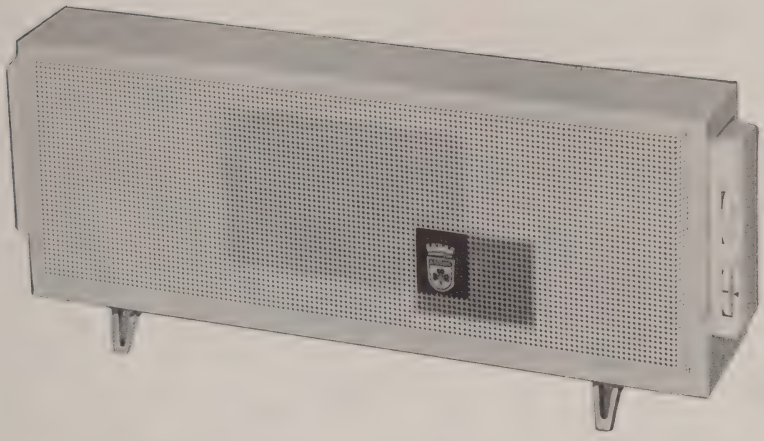
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

GRUNDIG MAGESTIC MODEL MINI-BOY Transistor 200

GRUNDIG MAGESTIC MODEL
MINI-BOY Transistor 200



GRUNDIG MAGESTIC MODEL
MINI-BOY Transistor 200

TRADE NAME	Grundig Majestic Model Mini-Boy Transistor 200 (1170-000)
IMPORTER	Majestic International Sales, 743 N. LaSalle Street, Chicago 10, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver with Speaker Cabinet
POWER SUPPLY	9 Volts DC
RATING	10MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	510—1620KC
	12MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1, A2, A3, A5.....GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

A4, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

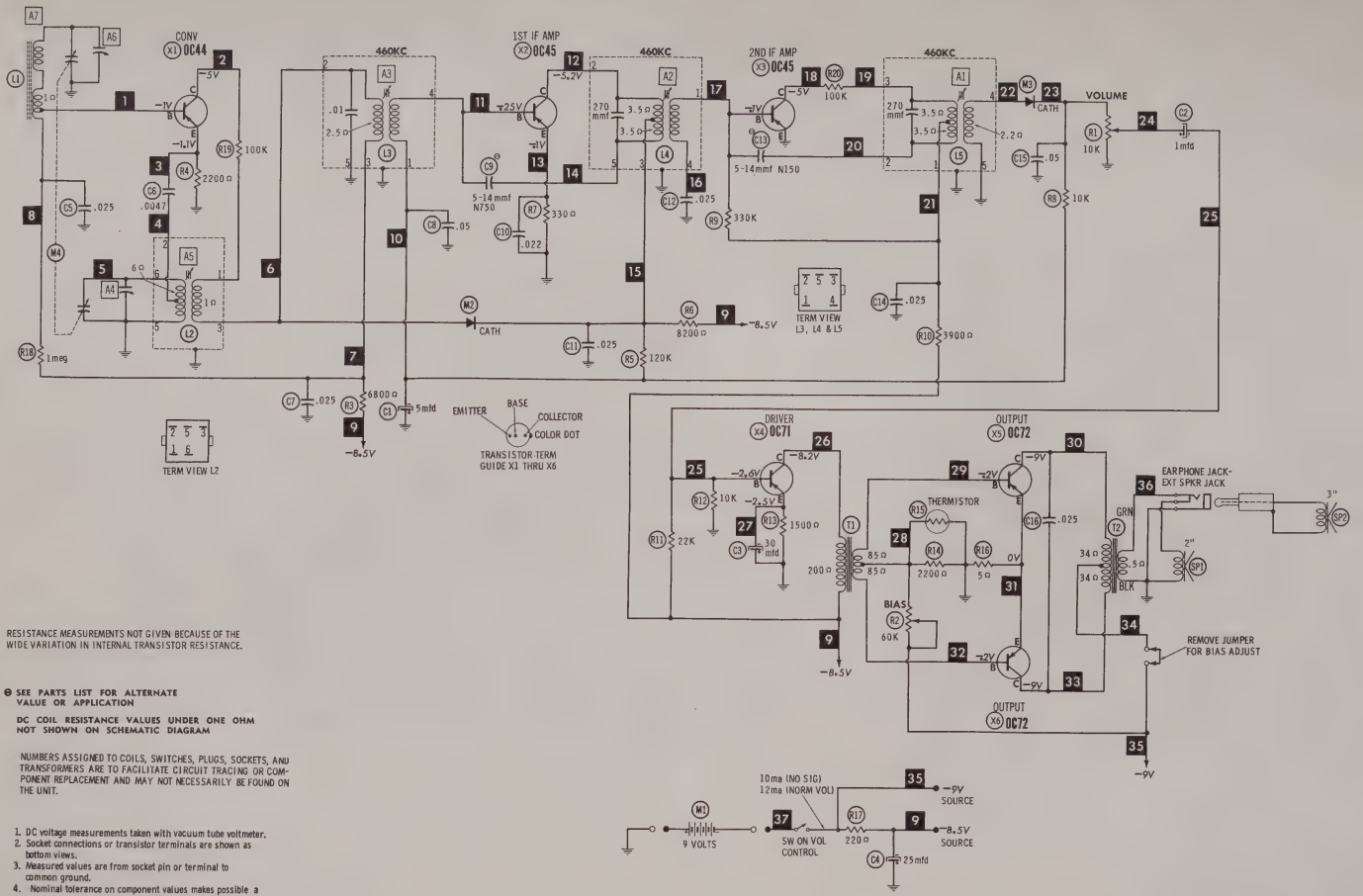
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	460KC	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	"
5.	"	600KC	600KC Signal.	"	A7	Adjust for maximum output by moving antenna coil turns along ferrite core.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KF962

SET 569 FOLDER 11



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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GRUNDIG MAGESTIC MODEL MINI-BOY Transistor 200

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	OC44	Converter	2N412	2N486	PNP
X2	OC45	1st IF Amplifier	2N410	2N483	PNP
X3	OC45	2nd IF Amplifier	2N410	2N483	PNP
X4	OC71	Driver	2N406	2N362	PNP
X5	OC72	Output	2N408	2N632	PNP
X6	OC72	Output	2N408	2N632	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	5	12		PTT51	NLW5-15	MT1-3	TT12X5	MLV5-12	TE-1127
C2	1	15		PTT61	NLW1-50	MT1-1	TT150X1		TE-1148
C3	30	6		PTT27	NLW30-6		TT6X30	MLV30-6	TE-1092
C4	25	10		PTT42	NLW25-10		TT10X25	MLV25-10	TE-1118

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.025				H-05S25		TA-125	TG-S25
C6	.0047		C80V502AM	DM-502	H-05D5	CCD-472	TA-250	TG-D50
C7	.025				H-05S25		TA-125	TG-S25
C8	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C9	5-14 N750	Note 1						
C10	.022		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C11	.025				H-05S25		TA-125	TG-S25
C12	.025				H-05S25		TA-125	TG-S25
C13	5-14 N150	Note 1						
C14	.025				H-05S25		TA-125	TG-S25
C15	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C16	.025				H-05S25		TA-125	TG-S25

Note 1. Values Vary. Replace with Original Value.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch	10K	7801-317				
R2	Bias	60K					

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	6800Ω				R12	10K			
R4	2200Ω				R13	1500Ω			
R5	120K				R14	2200Ω			
R6	8200Ω				R15	Thermistor			
R7	330Ω				R16	5Ω			
R8	10K				R17	220Ω			
R9	330K				R18	1meg			
R10	3900Ω				R19	100K			
R11	22K				R20	100K			

PRINTED BOARD

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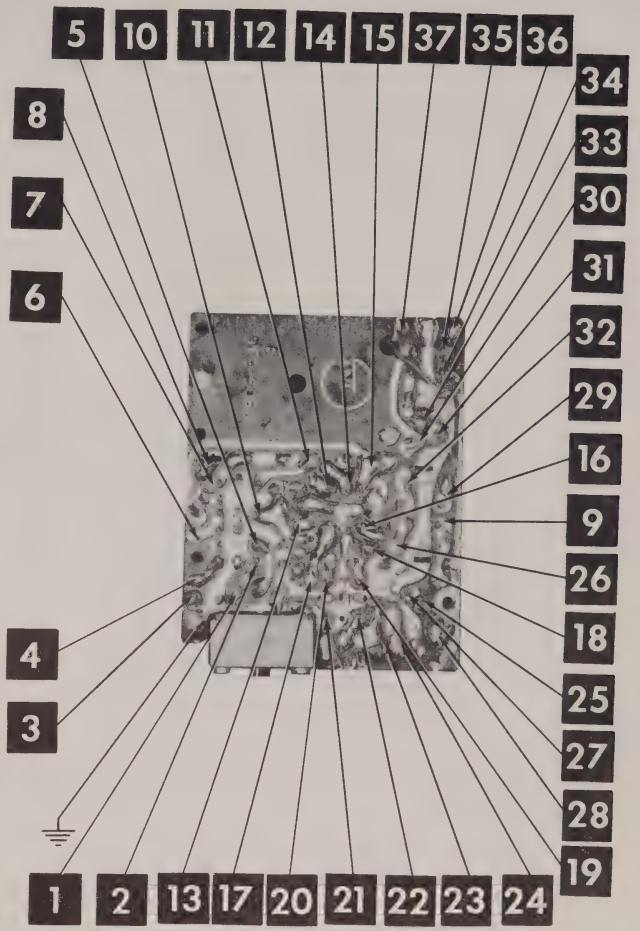


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Grundig Majestic PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	9238-094					
L2	Osc.	9202-003					
L3	1st IF	7220-101					
L4	2nd IF	7220-102					
L5	3rd IF	7220-103					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	9016-003					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	700Ω CT	4-6Ω	9016-004					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Grundig Majestic PART No.	QUAM PART No.	
SP1	2"	PM	4-6Ω	711/2		* In Speaker Cabinet
SP2	3"	PM	4-6Ω	7009/2 *		

BATTERIES

ITEM No.	VOLTAGE	Grundig Majestic PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Grundig Majestic PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	K5/2			1N60	Overload
M3	K5/2			1N60	Detector

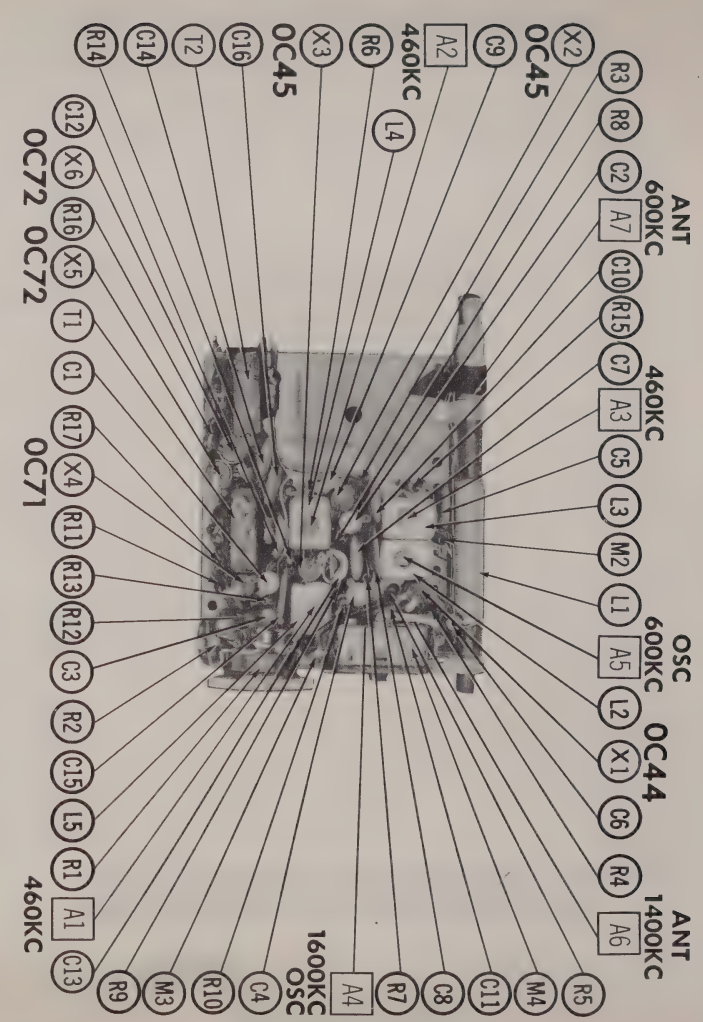
MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M4	Tuning Cap.	9633-033	2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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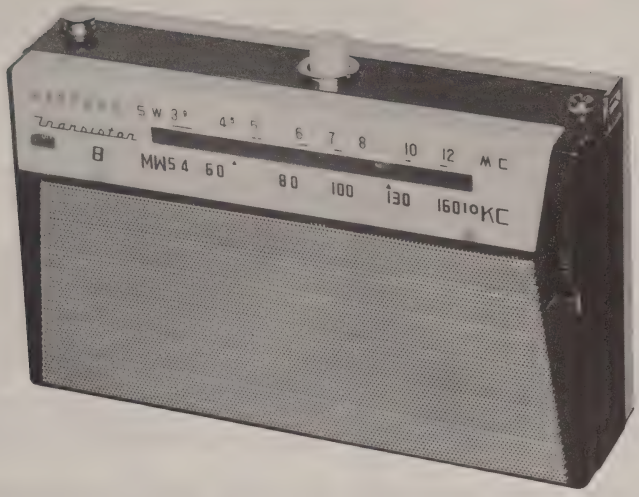
HARPERS MODEL GK-200

HARPERS MODEL GK-200



HARPERS MODEL GK-200

TRADE NAME	Harpers Model GK-200
IMPORTER	Harpers International, Inc., 315 Fifth Ave., New York 16, N. Y.
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver
POWER SUPPLY	6 Volts DC RATING 8MA @ 6 Volts DC (No Signal, Min. Volume) 15MA @ 6 Volts DC (Signal, Normal Volume)
TUNING RANGE — BROADCAST	540 - 1600KC SHORT WAVE 3.9 — 12MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
A8 and A12 are adjusted by moving appropriate antenna coil turns along ferrite core.
Suggested Alignment Tools:

A1 thru A4, A7.....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A5, A6, A9, A10..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
All.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KC (400% Mod.)	(MW) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A5, A6	"
3.	"	600KC	600KC	"	A7, A8	"
4.	"	12MC	(SW) 12MC	"	A9, A10	"
5.	"	3.9MC	3.9MC	"	A11, A12	Adjust for maximum output. Repeat Steps 2 thru 5.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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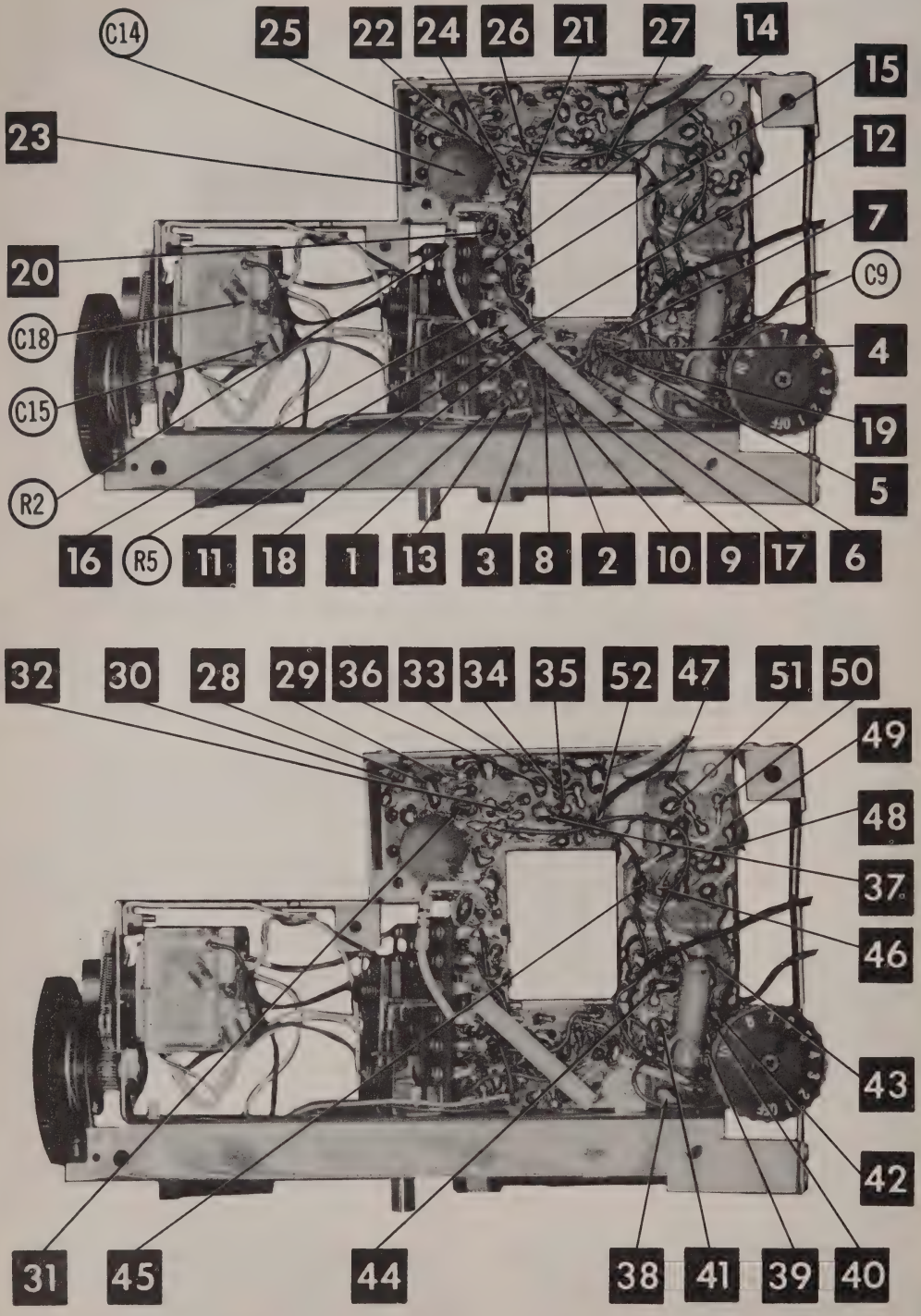
KF943

SET 569 FOLDER 12



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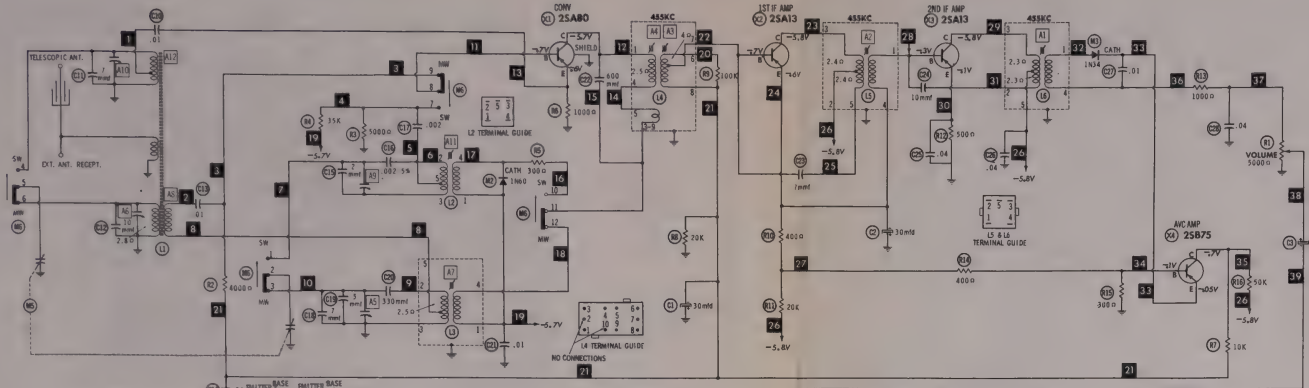
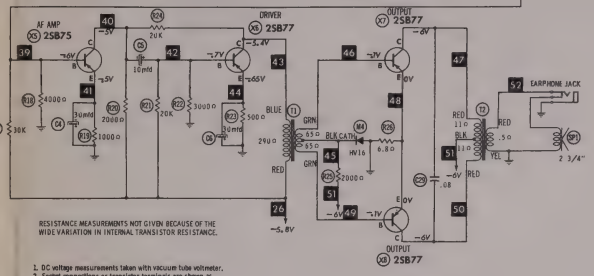
PRINTED BOARD



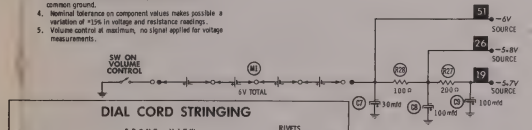
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

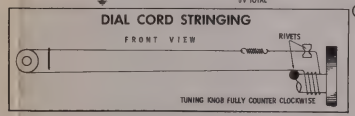
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



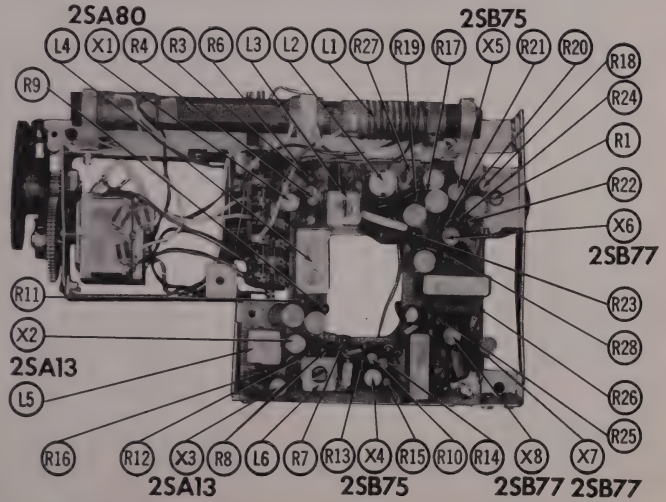
RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.





HARMES MODEL GK-300



PRINTED BOARD-RESISTOR, INDUCTOR & TRANSISTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2SA80	Converter	2N372		PNP
X2	2SA13	1st IF Amplifier	2N410		PNP
X3	2SA13	2nd IF Amplifier	2N410		PNP
X4	2SB75	AVC Amplifier	2N406		PNP
X5	2SB75	AF Amplifier	2N406		PNP
X6	2SB77	Driver	2N408		PNP
X7	2SB77	Output	2N408		PNP
X8	2SB77	Output	2N408		PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	HARPERS PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	30	6		BCD6035	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092
C2	30	6		BCD6035	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092
C3	10	6		BCD6010	ECPB408	MT1-5	PET1340	MLV10-6	TE-1087
C4	30	6		BCD6035	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092
C5	10	6		BCD6010	ECPB408	MT1-5	PET1340	MLV10-6	TE-1087
C6	30	6		BCD6035	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092
C7	30	6		BCD6035	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092
C8	100	6		PTT30	NLW100-6	MT1-18	TT6X100	MLV100-6	TE-1102
C9	100	6		PTT30	NLW100-6	MT1-18	TT6X100	MLV100-6	TE-1102

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	7		NPO-SI 6.8	TCZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C12	10		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C13	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	.04							
C15	2		NPO-SI 2.0	TCZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C16	.002 5%		1464-002		5R5D2	CM-19B-202J	MCE457	MS-22
C17	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C18	7		NPO-SI 6.8	TCZ-6R8	C10V7C	CCTC-6R8	CNO-568	10TCC-V68
C19	5		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C20	330		SI 330	D6-331	L10T33	CCD-331	B-333	10TS-T33
C21	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	600			D6-601	L10T6		GP360	10TS-T60
C23	7		NPO-SI 6.8	TCZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C24	10		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C25	.04							
C26	.04							
C27	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	.04							
C29	.08							

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			HARPERS PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch	5000Ω					

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	4000Ω			
R3	5000Ω			
R4	35K			
R5	300Ω			
R6	1000Ω			
R7	10K			
R8	20K			
R9	100K			
R10	400Ω			
R11	20K			
R12	500Ω			
R13	1000Ω			
R14	400Ω			
R15	300Ω			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R16	50K			
R17	30K			
R18	4000Ω			
R19	1000Ω			
R20	2000Ω			
R21	20K			
R22	3000Ω			
R23	500Ω			
R24	20K			
R25	2000Ω			
R26	6.8Ω			
R27	200Ω			
R28	100Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		HARPERS PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	SW Loopstick						
B	Ext. Ant. Loop						
C	BC Loopstick						
L2	SW Osc.						
L3	BC Osc.						
L4	1st IF						
L5	2nd IF						
L6	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HARPERS PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.3	1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HARPERS PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	250Ω CT	6-8Ω	ET-105		TA-20①	TR-101①		① Use 12Ω Tap

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HARPERS PART No.	QUAM PART No.	
SP1	2 3/4"	PM	6-8Ω		27A06Z12	

BATTERIES

ITEM No.	VOLTAGE	HARPERS PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-3A		930		1015		M-15R	4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		HARPERS PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	1N60			1N60	Overload
M3	1N34			1N34	Detector
M4	HV16				Output Bias Regulation

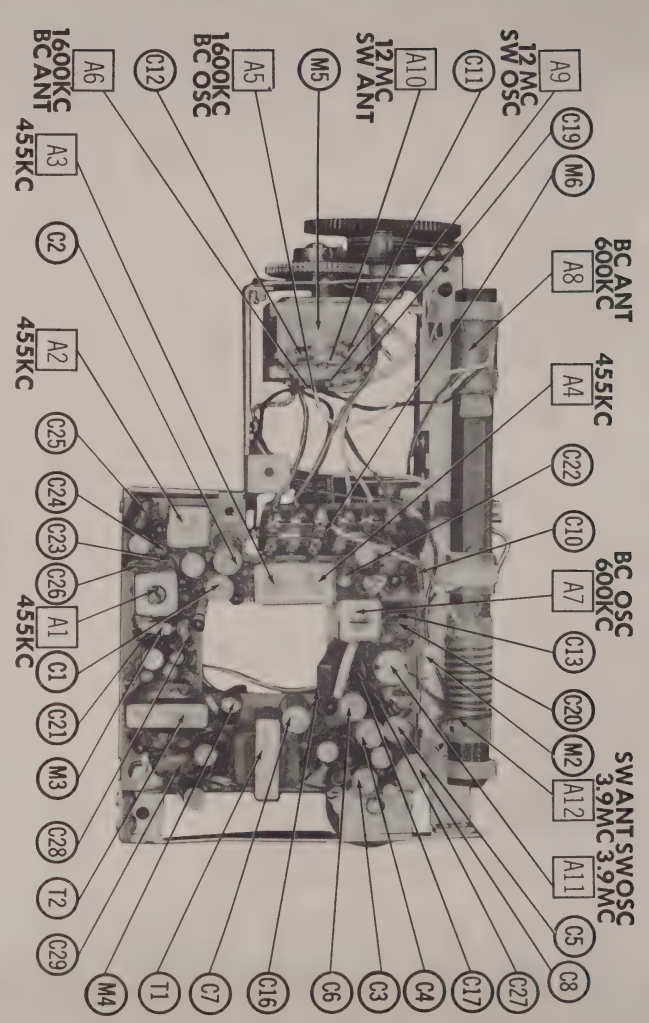
MISCELLANEOUS

ITEM No.	PART NAME	HARPERS PART No.	NOTES
M5	Tuning Cap.		2 Gang
M6	Switch		Selector (Pushbutton Type)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW

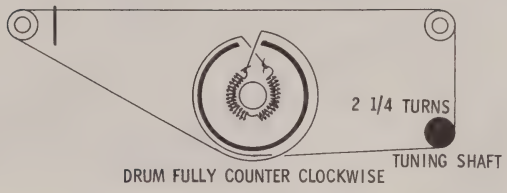


PHOTOFACT® Folder with CIRCUITRACE®

**MATSUSHITA or PANASONIC
MODEL T13**

MATSUSHITA or PANASONIC
MODEL T13

DIAL CORD STRINGING



MATSUSHITA or PANASONIC
MODEL T13

TRADE NAME	Matsushita or Panasonic Model T-13
IMPORTER	Matsushita Electric Corp. of America, 41 E. 42nd Street, New York 17, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC — RATING 5MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	525—1650KC — 11MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1, A2, A3, A5.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

A4, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	1650KC	"	"	A4	"
3.	"	525KC	Tuning gang fully closed.	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	"
5.	"	600KC	600KC Signal.	"	A7	Adjust for maximum output by moving coil turns along ferrite core. Repeat steps 2 thru 5.

SET 569 FOLDER 13

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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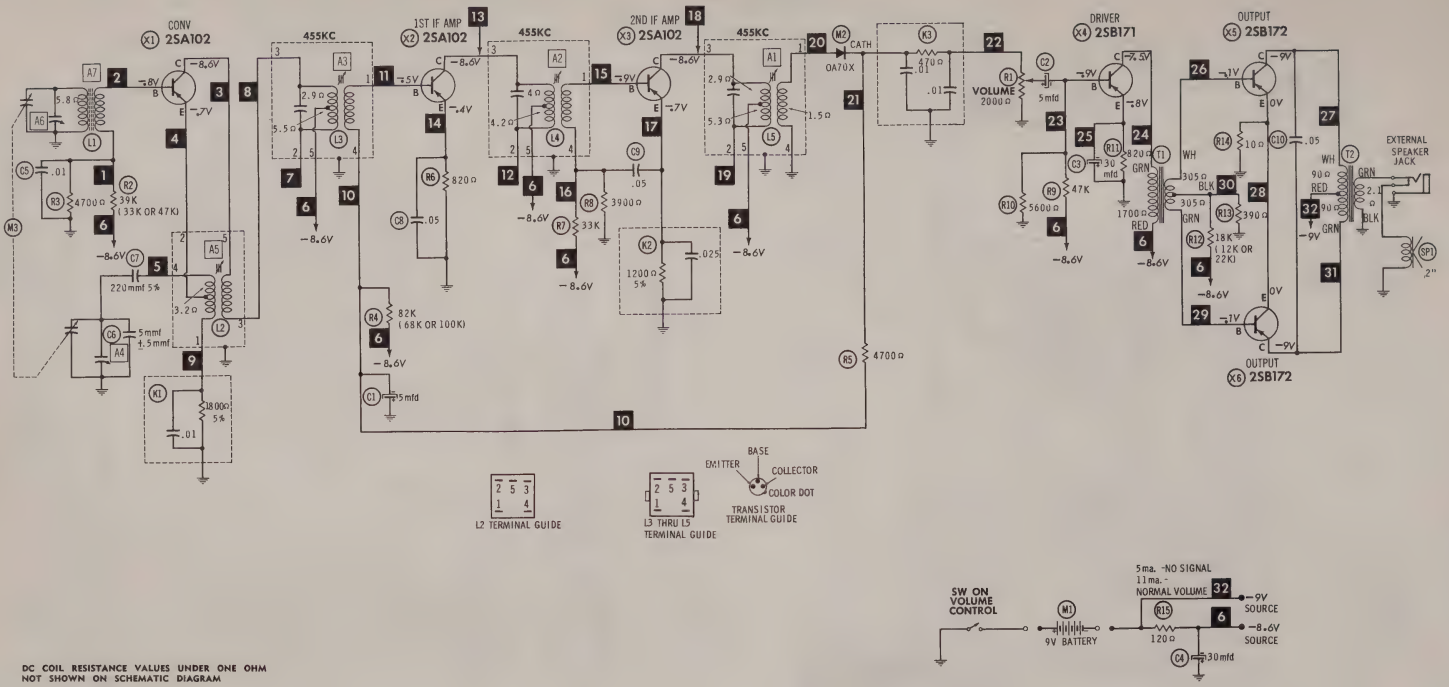
LF110



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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MATSUSHITA or PANASONIC
MODEL T13

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2SA102	Converter	2N1527		PNP
X2	2SA102	1st IF Amplifier	2N1525		PNP
X3	2SA102	2nd IF Amplifier	2N1525		PNP
X4	2SB171	Driver	2N406		PNP
X5	2SB172	Output	2N408		PNP
X6	2SB172	Output	2N408		PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MATSUSHITA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	5	3	NPA3V5		NLW5-15	MT1-3	TT6X5		
C2	5	3	NPA3V5		NLW5-15	MT1-3			
C3	30	3	NTC3V30		NLW30-6	MT1-13			
C4	30	10	NPA10V30		NLW30-15				

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.01		NPO-SI 5	DM-103	H-05S1	CCTO-4R7	TA-110	TG-S10
C6	5 +.5mmf			TCZ-4R7	C10V5C		CNO-547	10TCC-V50
C7	220 5%			TCZ-220			CNO-322	10TCC-T22
C8	.05			DA-503	H-05S5		TA-150	TG-S50
C9	.05			DA-503	H-05S5		TA-150	TG-S50
C10	.05			DA-503	H-05S5		TA-150	TG-S50

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MATSUSHITA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch	2000Ω	SNV16T1.2				

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R2	39K			(33K, 47K)*
R3	4700Ω			
R4	82K			(68K, 100K)*
R5	4700Ω			
R6	820Ω			
R7	33K			
R8	3900Ω			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R9	47K			
R10	56000Ω			
R11	820Ω			
R12	18K			(12K, 22K)*
R13	390Ω			
R14	10Ω			
R15	120Ω			

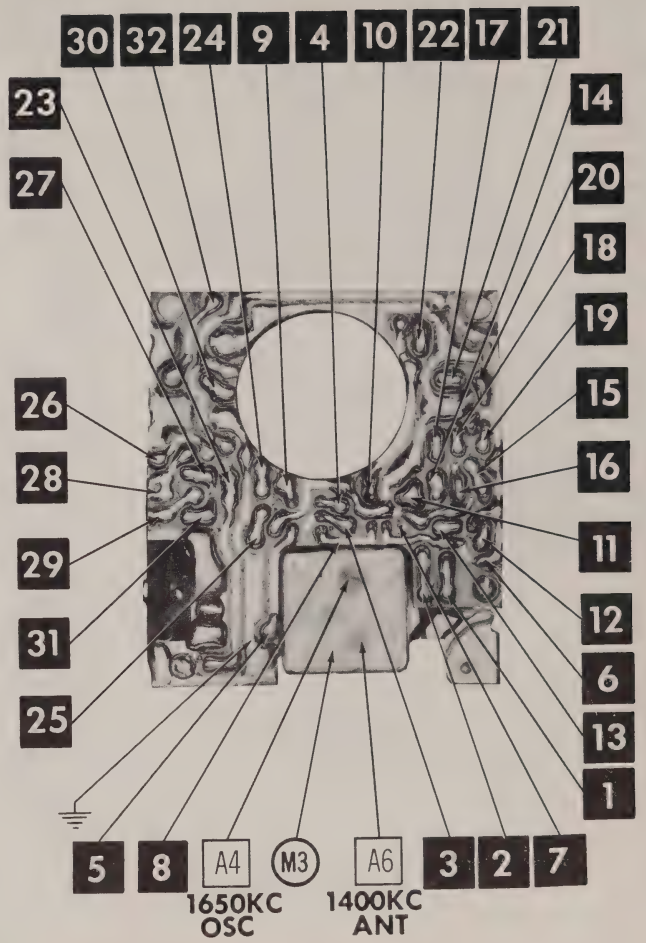
* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MATSUSHITA PART No.	REPLACEMENT DATA
K1	Converter Emitter Bias	.01mfd, 1800Ω, 5%	CR-21M 1.8KΩJ	
K2	2nd IF Emitter Bias	.025mfd, 1200Ω, 5%	CR-22P 1.2KΩJ	
K3	Diode RF Filter	.01mfd, .01mfd, 470Ω	CR-31P 470ΩM	

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo



MATSUSHITA or PANASONIC MODEL T13

FOLDER 13

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MATSUSHITA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	AM-1650-C					
L2	Osc.	AOP4-Y					
L3	1st IF	TI-S1B					
L4	2nd IF	TI-S2B					
L5	3rd IF	TI-S3					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MATSUSHITA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.6	1	TIP-2A					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MATSUSHITA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	600Ω CT	10-12Ω	TT-202					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MATSUSHITA PART No.	QUAM PART No.	
SP1	2"	PM	10-12Ω	P-220S		

BATTERIES

ITEM No.	VOLTAGE	MATSUSHITA	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
		PART No.	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	006-P		2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MATSUSHITA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	0A70X			1N60	Detector

MISCELLANEOUS

ITEM No.	PART NAME	MATSUSHITA PART No.	NOTES
M3	Tuning Cap.	2ZB-20	2 Gang

CABINETS & CABINET PARTS

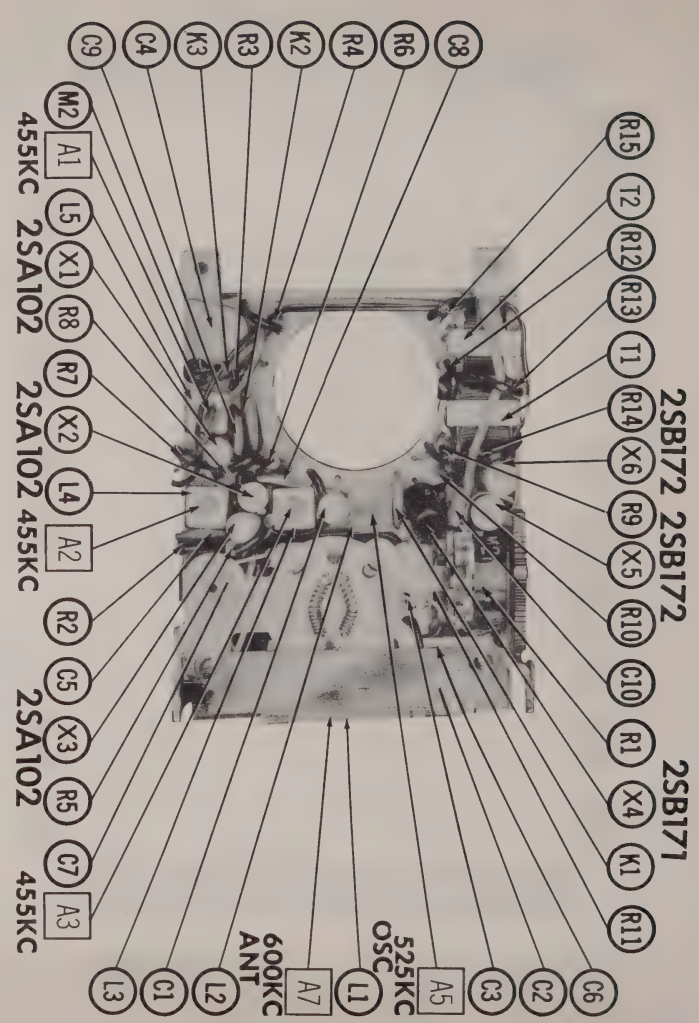
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Scale	T-13	(Mention Name and Part Number)
Dial Pointer	T-13	" " " " "
Knob, Tuning	T-19T	" " " " "
Knob, Volume	T-19V	" " " " "
Cabinet	T-13 Meca	" " " " "

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

RCA VICTOR CHASSIS RC-1192C, RS-179A, RS-183A, RS-189A, RS-189B, RS-194A

RCA VICTOR CHASSIS RC-1192C, RS-179A, RS-183A, RS-189A, RS-189B, RS-194A

MODEL RVCR-84

TRADE NAME	RCA Victor				
	Models	Tuner Chassis	Preamp. Chassis	Reverb. Chassis	Amp. Chassis
	PVC181, PVC182, PVC183 PVC184, PVC185, PVC186 PVC243, PVC244, PVC245				RS-189B
	PVCR45, PVCR46, PVCR84 PVCRH106, PVCRH407, PVCRH409	RC-1192C	RS-179A		RS-183A
	PVCR181, PVCR182, PVCR183 PVCR184, PVCR185, PVCR186 PVCR243, PVCR244, PVCR245	RC-1192C			RS-189B
	RVCR45, RVCR46, RVCR84	RC-1192C	RS-179A	RS-194A	RS-183A
	RVCR181, RVCR182, RVCR183 RVCR184, RVCR185, RVCR186 RVCR243, RVCR244, RVCR245	RC-1192C		RS-194A	RS-189B
	VC181, VC182, VC183 VC184, VC185, VC186 VC243, VC244, VC245				RS-189A
	VCR181, VCR182, VCR183 VCR184, VCR185, VCR186 VCR243, VCR244, VCR245	RC-1192C			RS-189A
MANUFACTURER	Radio Corp. of America, RCA Victor Home Instruments Div., Indianapolis 1, Indiana				
TYPE SET	AC Operated 9 Tube FM-AM Tuner, 2 Tube Stereo Preamplifier, 9 Tube Stereo Amplifier (RS-189B) or 11 Tube Stereo Amplifier (RS-183A), 5 Tube Reverberation Unit, and 4 Speed Automatic Record Changer				
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles	RATING	RS-179A, RS-183A: 185 Watts, 1.65A@117 Volts AC(Less Motor) RS-189B: 105 Watts, 1A@117 Volts AC (Less Motor) RS-194A: 25 Watts, .2A@117 Volts AC RC-1192C: 36 Watts, .34 A@117 Volts AC		
TUNING RANGE	BROADCAST 540 — 1620KC	FREQ. MOD.	88 — 108MC		

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE RCA VICTOR RP-215-1 — PHOTOFACT SET 545 FOLDER 14

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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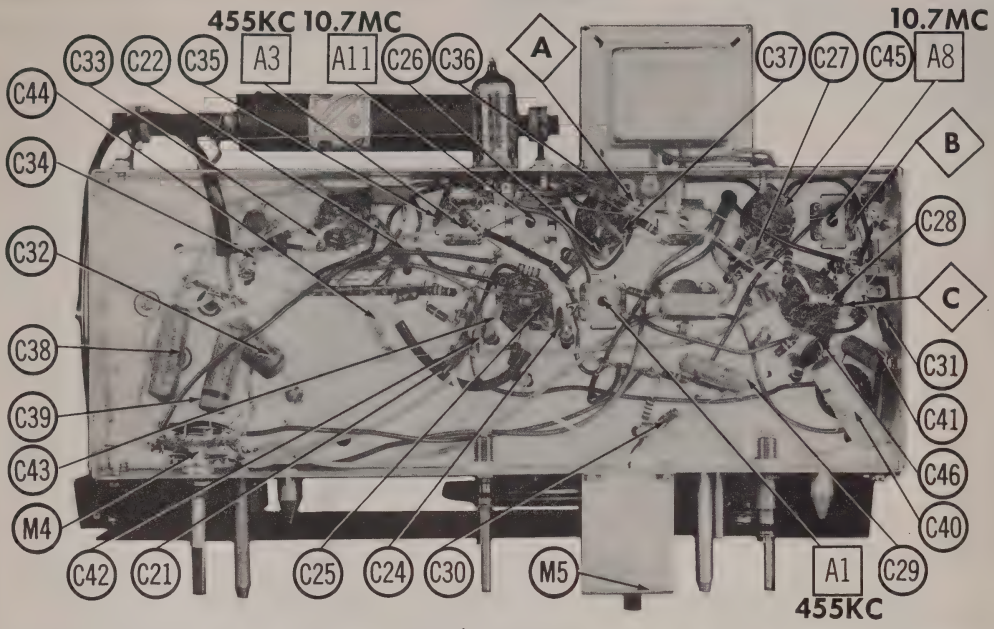
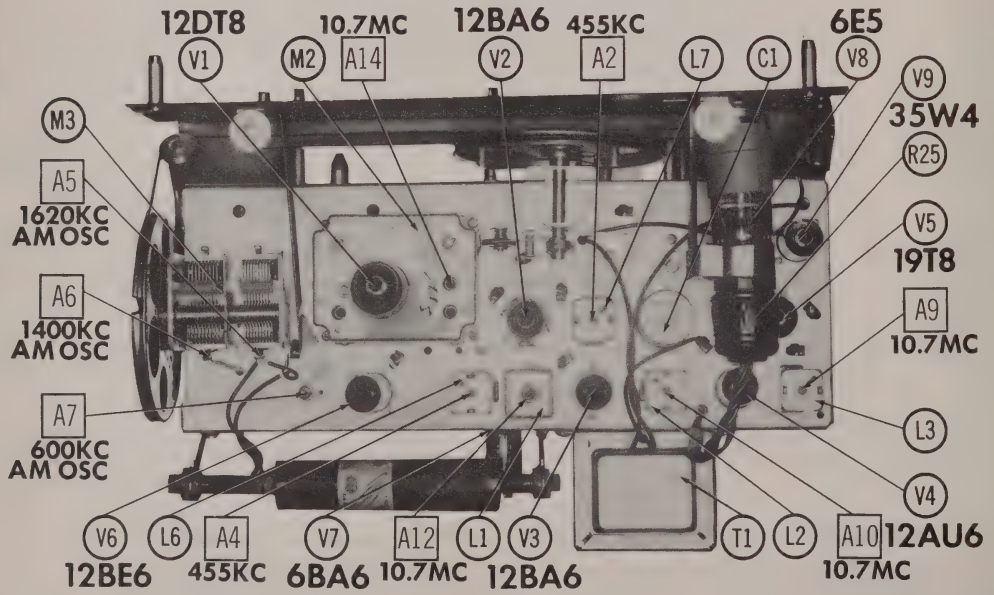
KN939

SET 569 FOLDER 14



TUNER CHASSIS BOTTOM VIEW-ALIGN., CAPACITOR & MISC. IDENT.



TUNER CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:

A1 thru A4, A8, A9, A10. . GENERAL CEMENT #5097, 8727
WALSCO #2515

A5, A6. . . . . GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

A7. . . . . GENERAL CEMENT #8721, 8722
WALSCO #2519

A11, A12. . . . . GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

A13, A14. . . . . GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (Unmod.)	(AM) Tuning gang fully open.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1620KC	"	"	A5	"
3.	"	1400KC	1400KC Signal.	"	A6	"
4.	"	600KC	600KC Signal.	"	A7	Adjust for maximum deflection. Repeat Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point (B). Common to chassis.	A8	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (C). Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	Across FM antenna terminals.	"	"	DC probe thru 1meg to pin 1 (grid) of FM Limiter. Common to chassis.	A10, A11, A12, A13, A14	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. thru 47K to point (B). Low side to chassis.	A8	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A9	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.
7.	Across FM antenna terminals.	"	"	Vert. amp. thru 47K to pin 1 (grid) of FM Limiter. Low side to chassis.	A10, A11, A12, A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

AFC "Off".

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Across FM antenna terminals with 150Ω in each lead.	87.5MC (Unmod.)	(FM) Low end stop.	DC probe thru 1meg to pin 1 (grid) of FM Limiter. Common to chassis.	A15	Adjust for maximum deflection.
9.	"	108.5MC	High end stop.	"	FM tuner drive string collar.	Adjust string tension for maximum deflection.
10.	"	95MC	95MC Signal.	"	A16	Adjust for maximum deflection.

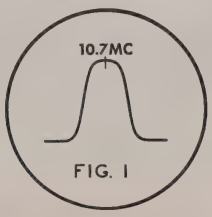


FIG. 1

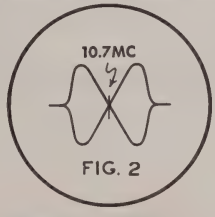
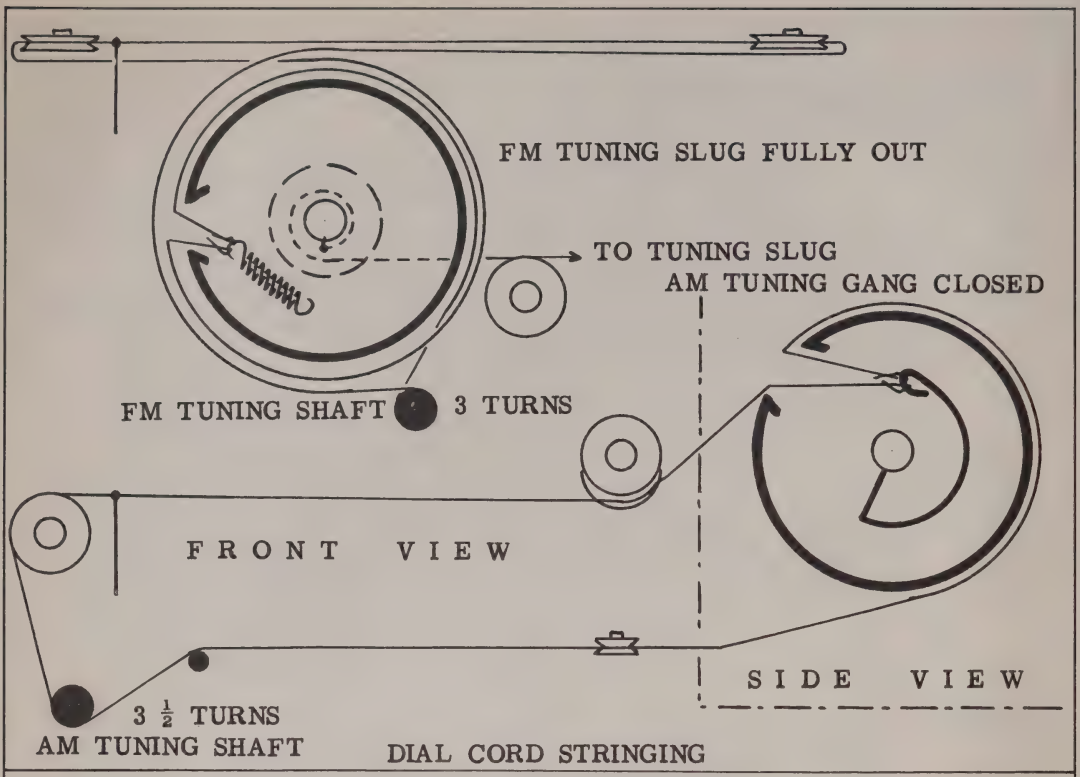
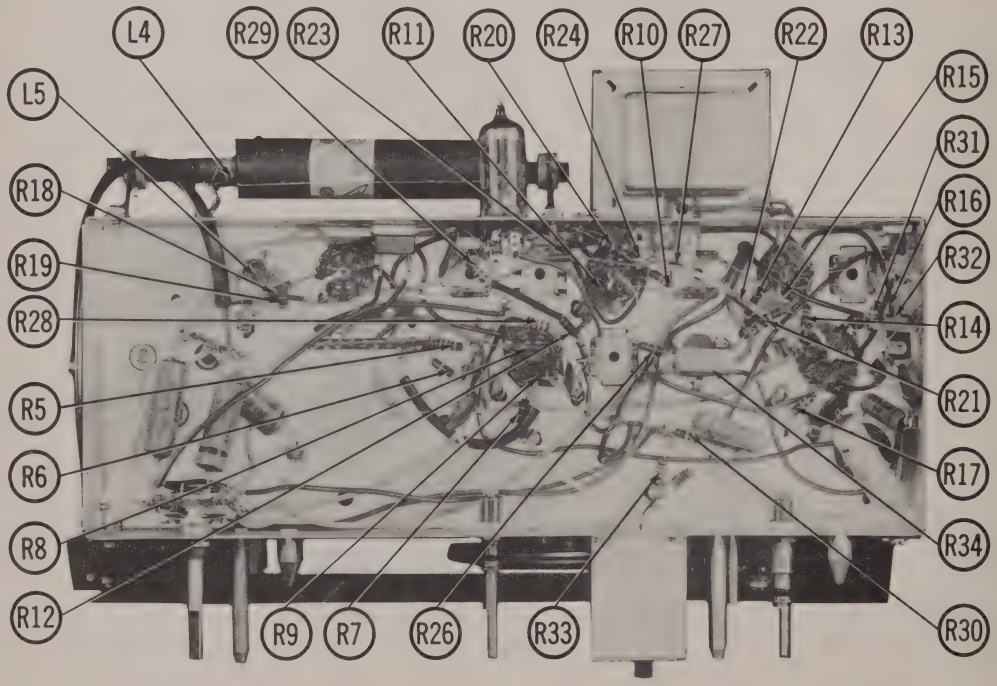


FIG. 2

SET 569 FOLDER 14



DIAL CORD STRINGING



TUNER CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp.-FM Conv.	12DT8	V6	AM Converter	12BE6
V2	1st FM IF Amplifier	12BA6	V7	AM IF Amplifier	6BA6
V3	2nd FM IF Amplifier	12BA6	V8	Tuning Indicator	6E5
V4	FM Limiter	12AU6	V9	Rectifier	35W4
V5	Disc.-AM Det.-Automatic Stereo Control	19T8			

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▪80	150	110008	AFH2-19	XB0181	XC2-30	WP216.24	TMD-2140	TVL-2442.1
B	▲50	150							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	5.6 N750 ±1mmf				C10V6U	CCTN-050		10TCU-V50
C3	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C4	3-12 P33							
C5	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	36 N150 5%					*		
C7	200		DI-200	DD-201	L10T2		GP320	10TS-T20
C8	200		DI-200	DD-201	L10T2		GP320	10TS-T20
C9	4-20 N470					*		
C10	36 N150 5%					*		
C11	10 N150 2%					*		
C12	10 N150 2%					*		
C13	1mmf P100		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	.001							
C15	3-12 P33					*		
C16	12 N150 2.5%					*		
C17	12 N150 2.5%					*		
C18	15 N150 2%		BPD-001	DD-102	BYA10D1	CCD-102		5HK-D10
C19	.001						B-110	5HK-S10
C20	100 N750 2%		BPD-01	DD-103	BYA10S1	CCD-103	B-210	5HK-D10
C21	.01		BPD-001	DD-102	BYA10D1	CCD-102	GP433	10TS-Q33
C22	.001		NPO-SI 33	TCZ-33	L10Q33	CCD-330	B-220	5HK-D22
C23	33 10%		BPD-0022	DD-222	BYA10D22	CCD-222	B-247	5HK-D47
C24	.0022		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C25	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C26	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	10TS-T47
C27	.0047		SI 470	D6-471	BYA10T47	CCD-471	GEM-4122	2TM-S22
C28	470		P288N-022	DD-203	CUB4S22	4DP-2-223	GP368	10TS-T68
C29	.022 200V			D6-681	5R5T68	CCD-681	B-110	5HK-S10
C30	680 10%		BPD-01	DD-103	BYA10S1	CCD-103	GEM-4147	4TM-S47
C31	.01		P488N-047	DD-503	CUB4S47	4DP-3-473	CN7-456	10TCU-Q56
C32	.047 400V		N750-SI 56	TCN-56	C10Q56U	CCTN-560		
C33	56 N750 10%					*	B-110	5HK-S10
C34	5.6 N3300 5%	#103440 ①	BPD-01	DD-103	BYA10S1	CCD-103	B-247	5HK-D47
C35	.01		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C36	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472		4TM-S56
C37	.0047		P684CM-057		DPMS6S56	4DP-3-563		4TM-S56
C38	.056 200V 10%		P684CM-057		DPMS6S56	4DP-3-563	GEM-6147	6TM-S47
C39	.056 200V 10%		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6247	6TM-D47
C40	.047 600V		P688N-0047	D6-472	CUB6D47	6DP-3-472	B-110	5HK-S10
C41	.0047 600V		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-247	5HK-D47
C43	.01		BPD-0047	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C44	.0047		BPD-0047	D6-472	BYA10D47M	CCD-472	B-110	5HK-S10
C45	.0047		BPD-01	DD-103	BYA10S1	CCD-103		
C46	.01							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in some versions.
RCA Victor Part Number.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R1	22K			
R2	1000Ω			
R3	220K			
R4	1meg			
R5	3300Ω			
R6	100K			
R7	33K			
R8	220Ω			
R9	150Ω			
R10	100K			
R11	82Ω			
R12	2.2meg			
R13	470K			
R14	10K			
R15	120Ω			
R16	100K			
R17	100K			
R18	33K			
R19	100Ω			
R20	470K			
R21	100K			
R22	10meg			
R23	6.8meg			
R24	1meg			
R25	1meg			
R26	220Ω			
R27	2.2meg			(100K)*
R28	390K			(390K)*
R29	150K			
R30	100K			
R31	100K			
R32	1meg			
R33	390K			
R34	1200Ω 3W	PW3-1200	3G-1200	

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	2nd FM IF	77513	FM-254	1451	RTC-9038	T630	
L2	3rd FM IF	77512					
L3	Discriminator	77511	FM-253	1464	RTC-8665	T634	
L4	Loopstick	108411	BC-419	705-A		T532	
L5	AM Osc.	79057	BC-393	71-OSC	RTC-8648	T510	
L6	1st AM IF	77416	BC-352	12-C 9	RTC-8632	T607	
L7	2nd AM IF	76328	BC-355	12-C6	RTC-8634	T609	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA RCA Victor PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ .34A	115V @ .24A Tap @ 6.3V @ .8A		110104	P-3045	PA-8421	26R38	R-30X	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA RCA Victor PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M1		110024			AFC

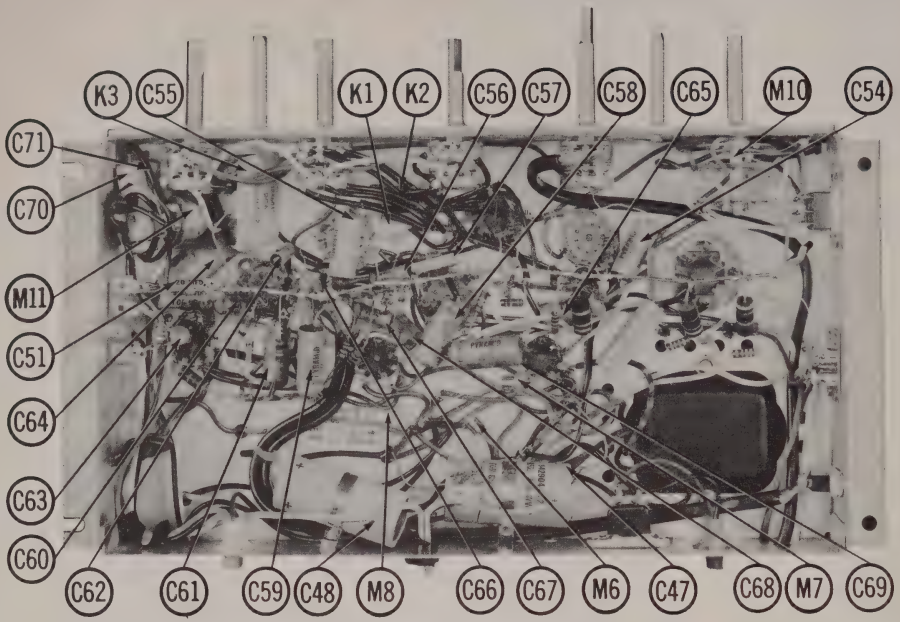
MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M2	Tuner	108444	FM Complete, Less Tube
M3	Tuning Cap.	108407	AM, 2 Gang (Ant. 11–301mmf, 12–130mmf)
M4	Switch	110103	Function (Rotary Wafer Type)
M5	Switch	110102	AFC (SPST Slide Type)

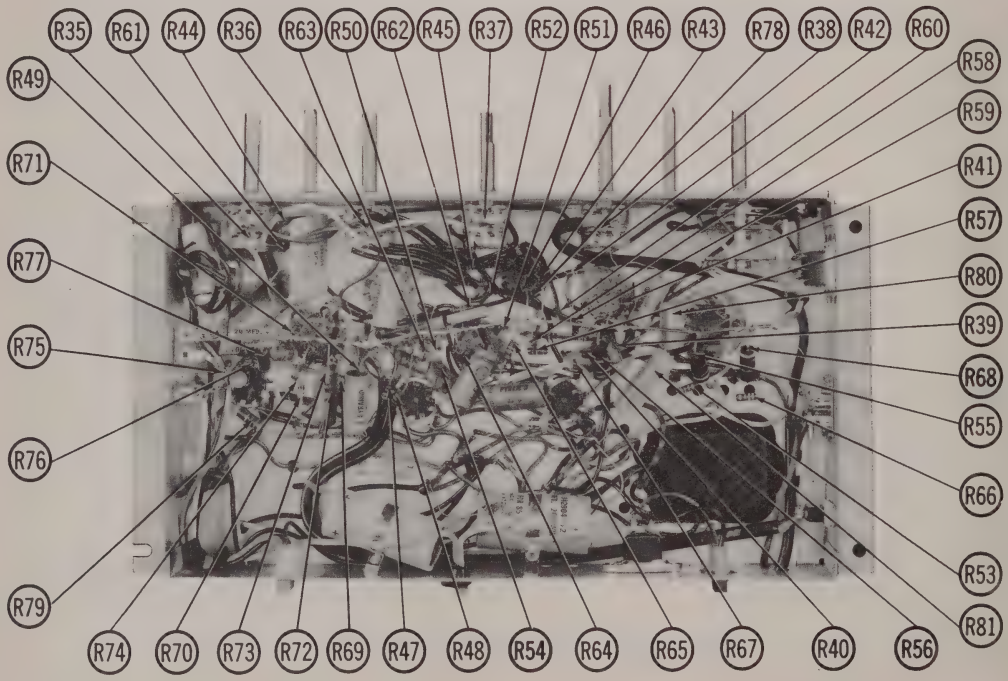
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RS-189B AMP CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.



RS-189B AMP CHASSIS BOTTOM VIEW-RESISTOR IDENT.

RS–189B AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V10	Left Channel AF Amp. - Right Channel AF Amp.	6CG7
V11	Left Channel AF Amp. - Right Channel AF Amp.	6CG7
V12	Left Channel AF Amp. - Right Channel AF Amp.	6CG7
V13	Left Channel Output	6BQ5 Note 1
V14	Center Channel AF Amp.	6CG7
V15	Center Channel Output	6BQ5 Note 1
V16	Right Channel Output	6BQ5 Note 1

Note 1. Manufacturer recommends replacing with 7189 when necessary.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C47	100	200	110108	PRS1595	BR10035	QT1-24	TC1265	TD-100-200	TVA-1718
C48	100	200	110108	PRS1595	BR10035	QT1-24	TC1265	TD-100-200	TVA-1718
C49A	▲35	400	108423	AFH4-79	D0663	XC4-55	FP444.8	TMQ-4550	TVL-4737
B	■35	400							
C	20	25							
D	▲20	25							
C50A	■20	400	106210	AFH4-57	D0520	XC4-48	FP430.97	TMQ-4514	TVL-4667
B	▲20	400							
C	20	25							
D	▲20	25							
C51	20	25	78927	PRS1330	BBR20-25	QT1-9	TC45	TD-20-150	TVA-1305.5
C52	4	10NP	110138	PRS7405	BBR4-150	NPQT-1	TCN504		TVANS-1150*
C53	4	10NP	110138	PRS7405	BBR4-150	NPQT-1	TCN504		TVANS-1150*

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C54	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C55	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C56	.0027 200V 10%		V84C6D3-10%		DPMS6D27	6DP-1-272	GEM-1623	6PS-D27
C57	820 10%		1469-00082		5R5T82	CM-19B-821K	MCB251	MS-382
C58	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P10
C59	.068 200V 10%		V84C4S68-10%		PM4S68	4DP-3-683		4TM-S68
C60	.0068 200V 10%		V84C4D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C61	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C62	.0033 200V 10%		V84C4D33-10%		PM6D33	6DP-1-332	GEM-16233	6TM-D33
C63	100 10%	#110226 ①		TCL-100		*		
C64	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274		4TM-P25
C65	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C66	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C67	.0027 200V 10%		V84C6D3-10%		DPMS6D27	4DP-5-274	GEM-1623	6PS-D27
C68	820 10%		1469-00082		5R5T82	CM-19B-821K	MCB251	MS-382
C69	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P10
C70	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C71	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

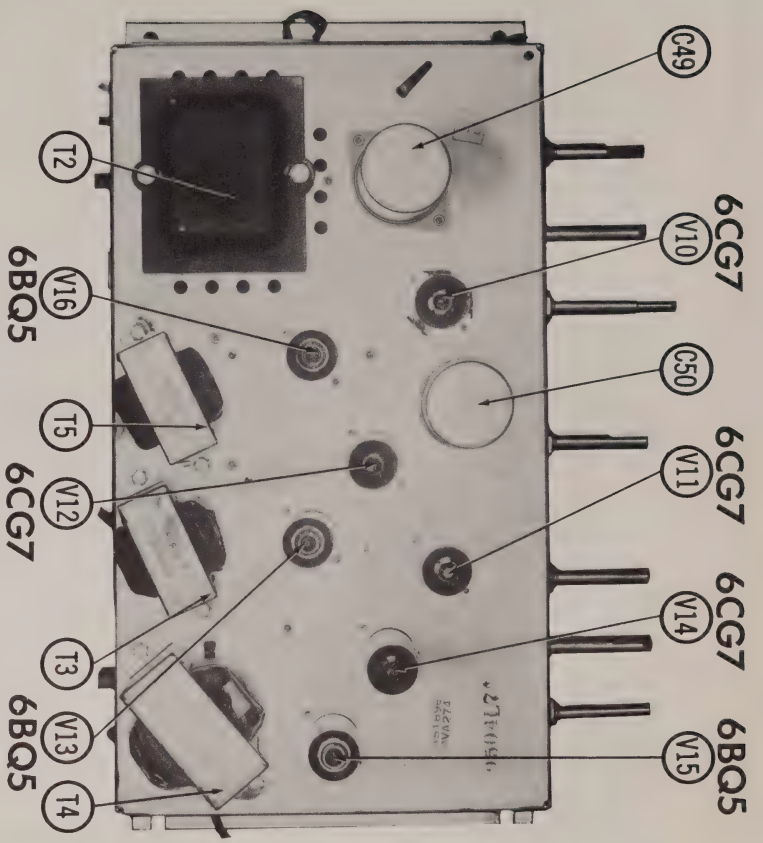
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in some versions.
RCA Victor Part Number.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS–IRC PART No.	MALLORY PART No.
R35A	Loudness, Right Channel	500K*	110116	TPL-103			
B	Loudness, Left Channel Push-Pull Off-On Switch	500K*					
R36A	Bass, Right Channel	500K	110114	B-60, SR-60, or (AB-60, SR-60, AK-7)	AD47-500K-Z/ FS-3		FA55A, RU55A, CS3500
B	Bass, Left Channel	500K					
R37A	Treble, Right Channel	500K	110115	B-59, SR-59, or (AB-59, SR-59, AK-7)	AD47-500K-S/ FS-3		FA55L, RU55L, CS3500
B	Treble, Left Channel	500K					

RS–189B AMP CHASSIS–TOP VIEW



RS–189B AMP PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS–IRC PART No.	MALLORY PART No.
R38A B	Reverberation Balance	500K 1meg	110225①	-		† QJ-1552R	■ UE4259

* Taps at 84K & 168K. ① Used in Chassis RS-189B. Chassis RS-189A has single 1meg Balance (Part #110113).
† "CONCENTRIKIT" Equivalent: K-15 Kit with Base Elements and Shafts: B17-133, P17-120 (Panel), (Not available as a factory assembled unit.) B11-137, R9-205 (Rear)

■ "STA-LOC" Equivalent: FA55R, RU16L, OF1625, IS2250.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R39	8200Ω				R61	220K			
R40	100K				R62	120K			
R41	2.7meg				R63	470K			
R42	120K				R64	1meg			
R43	1500Ω				R65	100K			
R44	220K				R66	3300Ω			
R45	120K				R67	470K			
R46	1500Ω				R68	47Ω 2W			
R47	220K				R69	100K			
R48	220K				R70	100K			
R49	15K				R71	1800Ω			
R50	470K				R72	1meg			
R51	1meg				R73	470K			
R52	100K				R74	100K			
R53	3300Ω				R75	3300Ω			
R54	470K				R76	470K			
R55	47Ω 2W				R77	120Ω 1W			
R56	68Ω 2W				R78	10K			
R57	100K				R79	3300Ω 1W			
R58	8200Ω				R80	1000Ω 4W	PW5-1000	5W-SQ-1000	
R59	2.7meg				R81	100Ω 7W	PW7-100	7W-SQ-100	
R60	120K								

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA
K1	Tone Comp.	470mmf, .001mfd, .0047mfd, .01mfd, 22K, 220K	106457	Centralab PC-378
K2	Tone Comp.	470mmf, .001mfd, .0047mfd, .01mfd, 22K, 220K	106457	Centralab PC-378
K3	Loudness Comp.	.022mfd, .022mfd, .047mfd, .047mfd, 8200Ω, 8200Ω, 22K, 22K	110118	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	RCA Victor PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	117V Ⓐ 1A	130V Ⓐ .650A AC	6.3V Ⓐ 4.8A	110110					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RCA Victor PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	5600Ω	3-4Ω	110111	A-3019	A-8092	26S49	S-5Z	
T4	6000Ω	3-4Ω	110112		A-3824	24S55	S-56Z	
T5	5600Ω	3-4Ω	110111	A-3019	A-8092	26S49	S-5Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	
SP1	5"x 7"	PM	3-4Ω	108975	57A15	* Models VC-181, VC-182, VC-183, VC-184, VC-185, VC-186, VRC-181, VRC-182, VRC-183, VRC-184, VRC-185, VRC-186
SP2	3½"	PM	6-8Ω	105395	3A15TZ6.5	
SP3	15"	PM	3-4Ω	110141 *	15A10LZ4	
	12"	PM	3-4Ω	106702♦	12A1	♦ Models VC-243, VC-244, VC-245, VRC-243, VRC-244, VRC-245
SP4	5"x 7"	PM	3-4Ω	108975	57A15	
SP5	3½"	PM	6-8Ω	105395	3A15TZ6.5	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT (Measured)	RCA Victor PART No.	RCA PART No.	SARKES TARZIAN PART No.	
M6	.180A	106379	1N1763	F4	
M7	.180A	106379	1N1763	F4	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RCA Victor PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M8	1½" length of #24 Wire		105252*		318.750 (3/4A 250V P/T)		GJV 3/4	

* Replacement should be with 3/4A 250V, Pigtail Type.

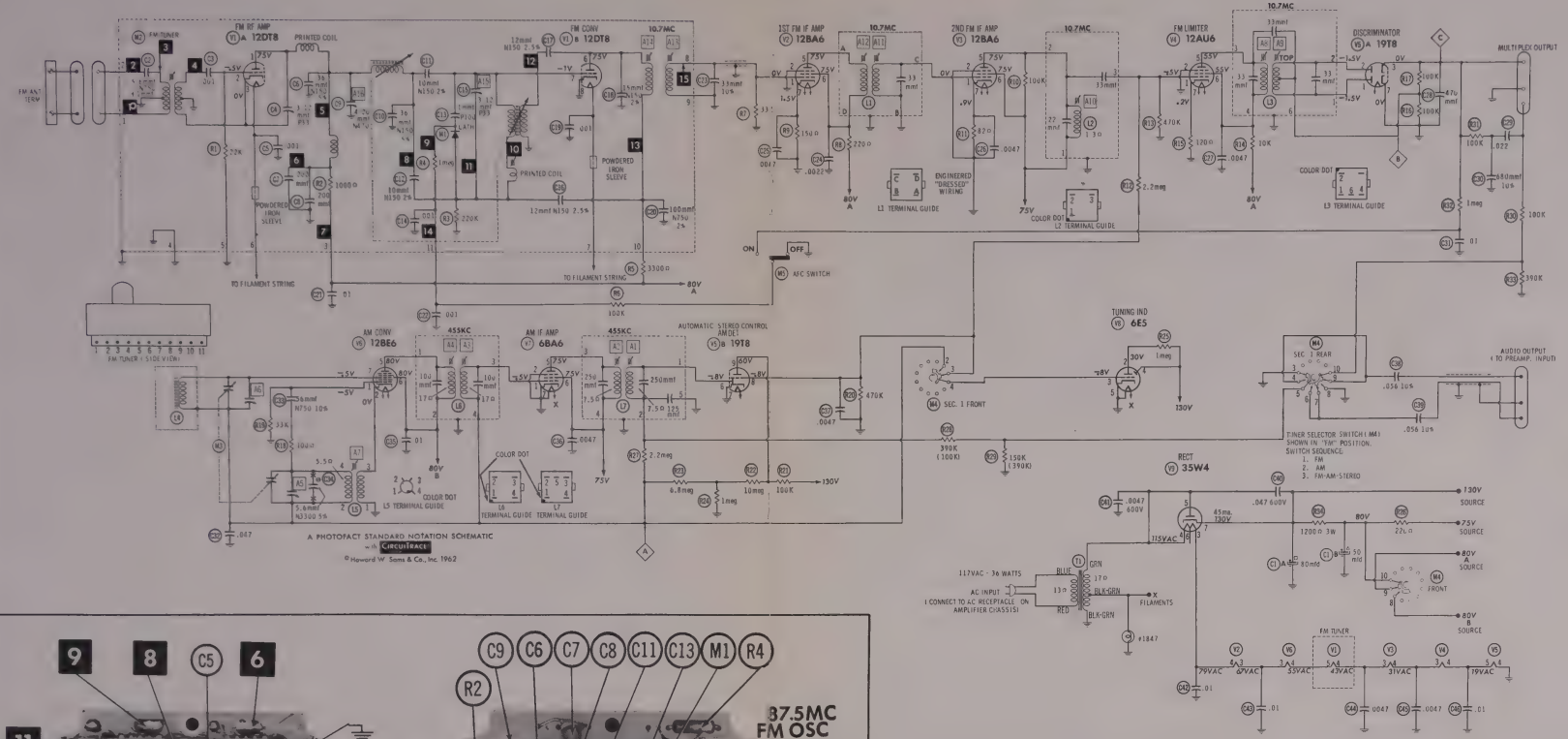
PHONO CARTRIDGE & NEEDLES

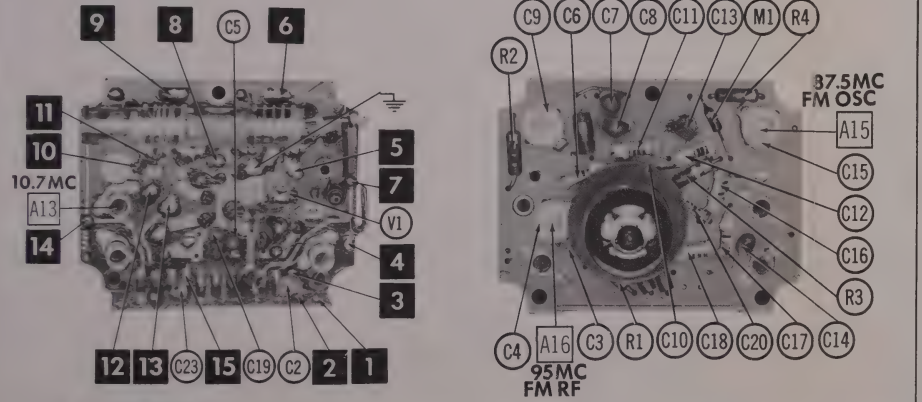
*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	RCA Victor PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M9	110023 (200-9)	110022*							

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M10	Switch	108468	Function, Rotary Wafer Type
M11	Switch	108457	Off-On (Part of Changer)





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FM RF SUBCHASSIS

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

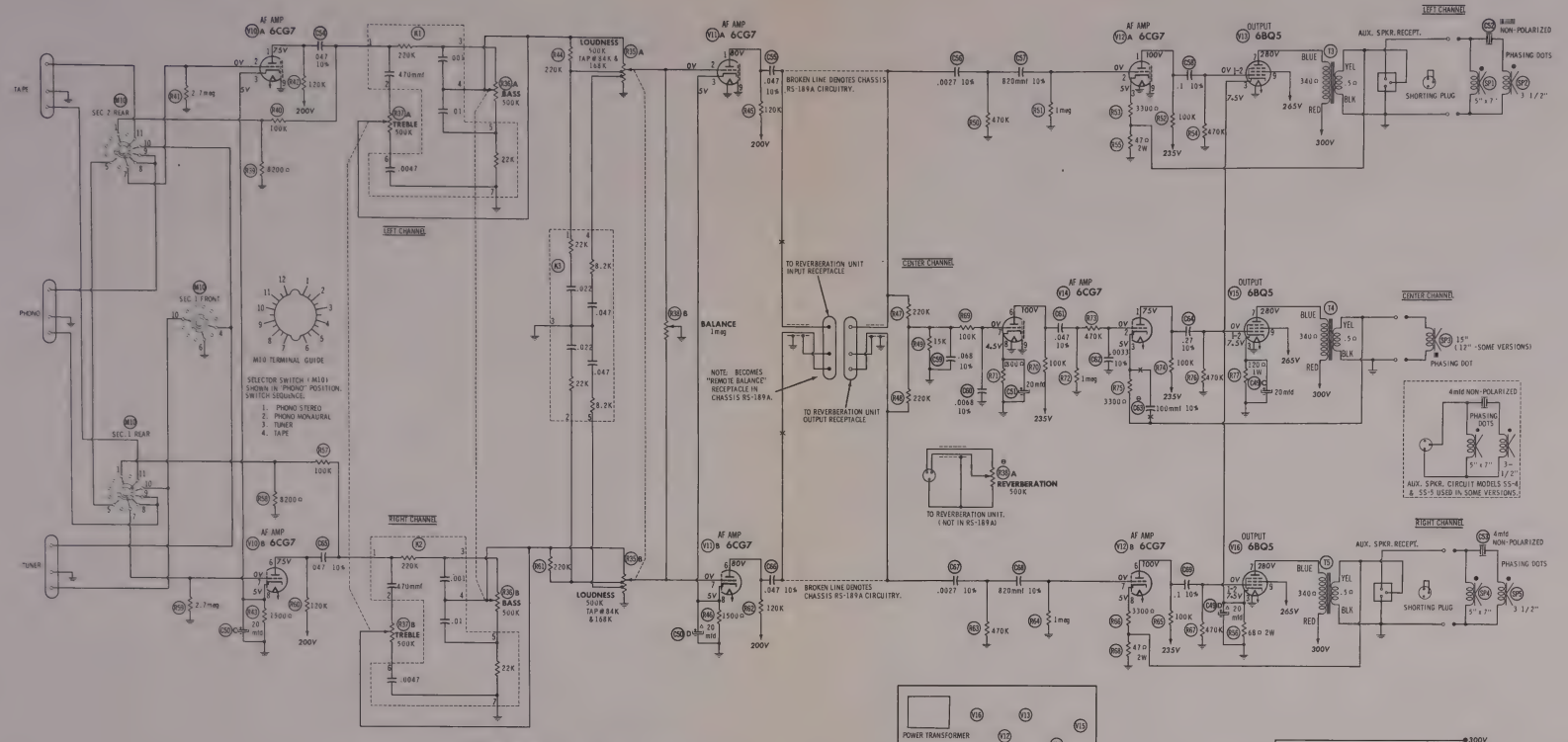
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	†2200Ω	22K	.1Ω	30Ω	32Ω	†4500Ω	220K	0Ω	0Ω
V2	12BA6	.1Ω	0Ω	30Ω	25Ω	†1400Ω	†1400Ω	150Ω		
V3	12BA6	.1Ω	0Ω	30Ω	25Ω	†1400Ω	†1400Ω	82Ω		
V4	12AU6	400K	0Ω	25Ω	15Ω	†11K	†11K	120Ω		
V5	19T8	100K	100K	200K	0Ω	15Ω	540K	0Ω	380K	†100K
V6	12BE6	33K	.1Ω	30Ω	32Ω	†1200Ω	†1200Ω	2meg		
V7	6BA6	2meg	0Ω	FIL	FIL	†1400Ω	†1400Ω	0Ω		
V8	6E5	FIL	†1meg	380K	†0Ω	0Ω	FIL			
V9	35W4	NC	NC	25Ω	18Ω	18Ω	NC	¶ INF		

ALL MEASUREMENTS TAKEN IN "STEREO FM-AM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V9. NC NO CONNECTION

RCA VICTOR CHASSIS RC-1192C, RS-179A, RS-183A, RS-189A, RS-189B, RS-194A



RESISTANCE READINGS (Cont.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V10	6CG7	††134K	2.7meg ■1.3meg	1300Ω	FIL	FIL	††134K	2.7meg ■1.3meg	1500Ω	0Ω
V11	6CG7	††134K	0Ω	1500Ω	FIL	FIL	††134K	0Ω	1500Ω	0Ω
V12	6CG7	††104K	1meg	3300Ω	FIL	FIL	††104K	1meg	3300Ω	0Ω
V13	6BQ5	NC	470K	68Ω	FIL	FIL	NC	††440Ω	NC	††1100Ω
V14	6CG7	††104K	1.5meg	3300Ω	FIL	FIL	††104K	115K	1800Ω	0Ω
V15	6BQ5	NC	470K	120Ω	FIL	FIL	NC	††440Ω	NC	††1100Ω
V16	6BQ5	NC	470K	68Ω	FIL	FIL	NC	††440Ω	NC	††1100Ω

†† MEASURED FROM OUTPUT OF M6.
■ MEASURED IN "MONAURAL PHONO" POSITION.
NC NO CONNECTION

TUBE LAYOUT (BOTTOM VIEW)

POWER TRANSFORMER

SW ON LOUDNESS CONTROL
PULL: NORMAL OPERATION
PUSH: PHONO AUTOMATIC OFF

117VAC-105WATTS (LESS MOTOR)

TUNER AC RECEPT.

REVERBERATION UNIT AC RECEPT.

1 1/2" LENGTH #24 WIRE

MOTOR

300V SOURCE
265V SOURCE
235V SOURCE
200V SOURCE

RCA VICTOR CHASSIS RC-1192C, RS-179A, RS-183A, RS-189A, RS-189B, RS-194A

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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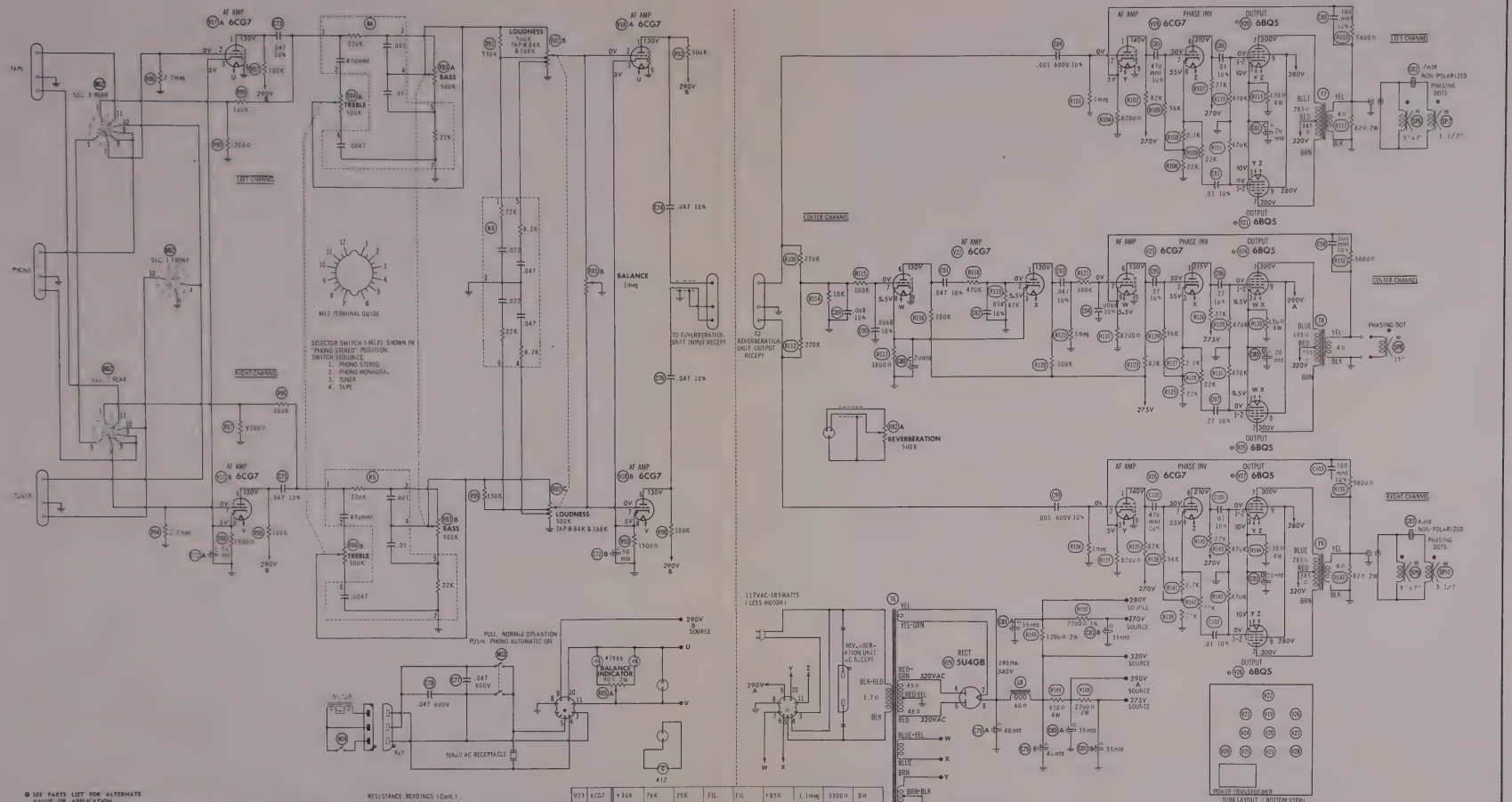
RS-189 AMP SCHEMATIC



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS (Cont.)

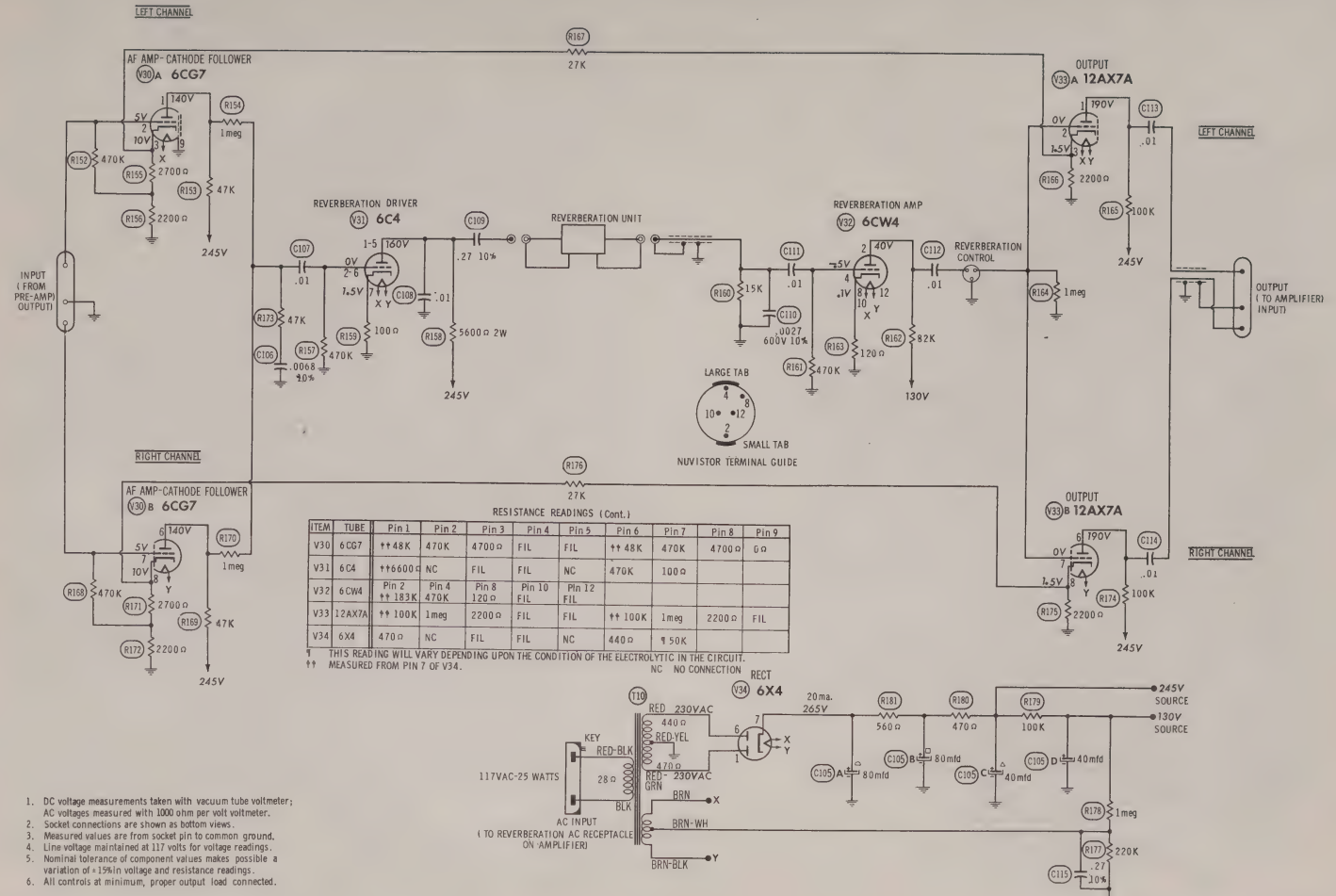
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V17	6CG7	+100K	2.7meg ±1.35meg	1500Ω	FIL	FIL	+100K	2.7meg ±1.35meg	1500Ω	0Ω
V18	6CG7	+100K	0Ω	1500Ω	FIL	FIL	+100K	0Ω	1500Ω	0Ω
V19	6CG7	+85K	1meg	3300Ω	FIL	FIL	+30K	78K	25K	0Ω
V20	6BQ5	NC	470K	130Ω	FIL	FIL	NC	+345Ω	NC	+1200Ω
V21	6BQ5	NC	470K	130Ω	FIL	FIL	NC	+405Ω	NC	+1200Ω
V22	6CG7	+100K	47K	1800Ω	FIL	FIL	+100K	110K	1800Ω	0Ω

V23	6CG7	+30K	78K	25K	FIL	FIL	+85K	1.1meg	3300Ω	0Ω
V24	6BQ5	NC	470K	130Ω	FIL	FIL	NC	+255Ω	NC	+970Ω
V25	6BQ5	NC	470K	130Ω	FIL	FIL	NC	+295Ω	NC	+1200Ω
V26	6CG7	+85K	1meg	3300Ω	FIL	FIL	+30K	78K	25K	0Ω
V27	6BQ5	NC	470K	130Ω	FIL	FIL	NC	+345Ω	NC	+1200Ω
V28	6BQ5	NC	470K	130Ω	FIL	FIL	NC	+405Ω	NC	+1200Ω
V29	5U4GB	NC	¶ INF	NC	450Ω	NC	48Ω	NC	¶ INF	

MEASURED IN "MONAURAL PHONO" POSITION.
¶ MEASURED FROM PIN 8 OF V29.

NC NO CONNECTION

RCA VICTOR CHASSIS RC-1192C, RS-179A, RS-183A, RS-189A, RS-189B, RS-194A



RESISTANCE READINGS (Cont.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V30	6CG7	†† 48K	470K	4700Ω	FIL	FIL	†† 48K	470K	4700Ω	0Ω
V31	6C4	†† 6600Ω	NC	FIL	FIL	NC	470K	100Ω		
V32	6CW4	Pin 2 †† 183K	Pin 4 470K	Pin 8 120Ω	Pin 10 FIL	Pin 12 FIL				
V33	12AX7A	†† 100K	1meg	2200Ω	FIL	FIL	†† 100K	1meg	2200Ω	FIL
V34	6X4	470Ω	NC	FIL	FIL	NC	440Ω	¶ 50K		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 7 OF V34.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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RCA VICTOR CHASSIS RC-1192C, RS-179A, RS-183A, RS-189A, RS-189B, RS-194A

REVERBERATION AMP SCHEMATIC

RCA VICTOR CHASSIS RC-1192C, RS-179A, RS-183A, RS-189A, RS-189B, RS-194A

PREAMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V17	Left Channel AF Amp. - Right Channel AF Amp.	6CG7	V18	Left Channel AF Amp. - Right Channel AF Amp.	6CG7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C72A	■50	10	108497	AFH2-06	B0160	XC2-29	WP202.1	TMD-2045	TVL-2320
B	▲50	10							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C73	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C74	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C75	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C76	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C77	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C78	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R82A	Reverberation	500K	110192				
B	Loudness, Right Channel	500K *					
C	Loudness, Left Channel	500K *					
R83A	Bass, Right Channel	500K	110152	B-60, SR-60, or (AB-60, SR-60, AK-7)	AD47-500K-Z/ FS-3		FA55A, RU55A, CS3500
B	Bass, Left Channel	500K					
R84A	Treble, Right Ch.	500K	110153	B-59, SR-59, or (AB-59, SR-59, AK-7)	AD47-500K-S/ FS-3		FA55L, RU55L, CS3500
B	Treble, Left Ch.	500K					
R85A	Balance Indicator	900Ω(2W)	110150				
B	Balance	1meg					

* Taps @ 84K and 168K.

RESISTORS

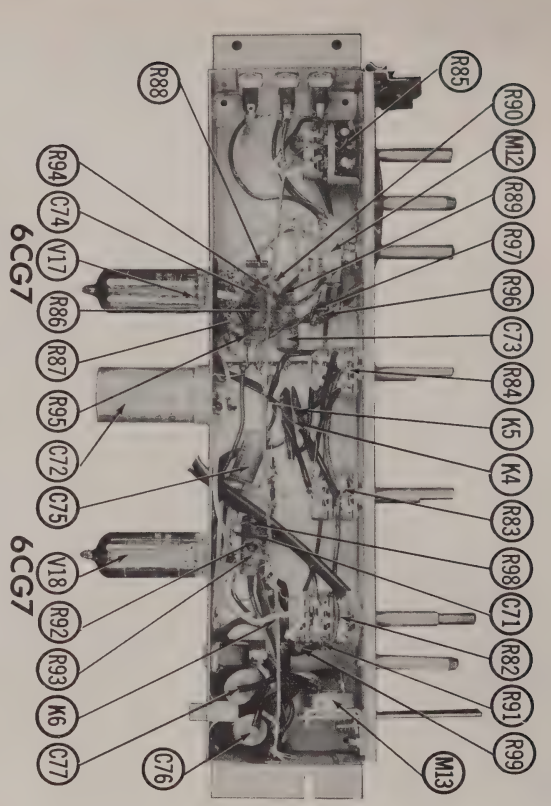
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS	ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R86	2.7meg				R93	1500Ω			
R87	100K				R94	2.7meg			
R88	1500Ω				R95	100K			
R89	100K				R96	100K			
R90	8200Ω				R97	8200Ω			
R91	330K				R98	100K			
R92	100K				R99	330K			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA
K4	Tone Comp.	470mmf, .001mfd, .0047mfd, .01mfd, 22K, 220K	106457	Centralab PC-378
K5	Tone Comp.	470mmf, .001mfd, .0047mfd, .01mfd, 22K, 220K	106457	Centralab PC-378
K6	Loudness Comp.	.022mfd, .022mfd, .047mfd, .047mfd, 8200Ω, 8200Ω, 22K, 22K	110118	

PREAMP CHASSIS



MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M12	Switch	108473	Function (Rotary, Wafer Type)
M13	Switch	110149	Off-On (Push Type)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

RS-183A AMP CHASSIS-RESISTOR IDENT.

RS-183A AMP CHASSIS-CAPACITOR IDENT.

RS–183A AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V19	Left Channel AF Amp. - Phase Inverter	6CG7	V24	Center Channel Output	6BQ5 Note 1
V20	Left Channel Output	6BQ5 Note 1	V25	Center Channel Output	6BQ5 Note 1
V21	Left Channel Output	6BQ5 Note 1	V26	Right Channel AF Amp. - Phase Inverter	6CG7
V22	Center Channel AF Amp.	6CG7	V27	Right Channel Output	6BQ5 Note 1
V23	Center Channel AF Amp. - Phase Inverter	6CG7	V28	Right Channel Output	6BQ5 Note 1
			V29	Rectifier	5U4GB

Note 1. Manufacturer recommends replacing with 7189 when necessary.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C79A	▲40	450	102913	AFH2-57	B0450	XC2-25	FP238	TMD-2650	TVL-2764
B	▲40	450							
C80A	■35	400	108423	AFH4-79	D0663	XC4-55	FP444.8	TMQ-4550	TVL-4737
B	▲35	400							
C	20	25							
D	▲20	25							
C81A	▲35	400	108423	AFH4-79	D0663	XC4-55	FP444.8	TMQ-4550	TVL-4737
B	■35	400							
C	▲20	25							
D	20	25							
C82	4	10NP	110138	PRS7405	BBR4-150	NPQT-1	TCN504		TVANS-1150*
C83	4	10NP	110138	PRS7405	BBR4-150	NPQT-1	TCN504		TVANS-1150*

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C84	.001 600V 10%		V84C6D1-10%		PM6D1	6DP-1-102	GEM-1621	6TM-D10
C85	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C86	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S10
C87	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S10
C88	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C89	.068 200V 10%		V84C2S68-10%		PM4S68	4DP-3-683		4TM-S68
C90	.0068 400V 10%		V84C6D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C91	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C92	.018 200V 10%		P68CM-018		PM2S2	4DP-2-203	GEM-1612	2TM-S20
C93	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C94	.0068 400V 10%		V84C4D68-10%		PM6D 68	6DP-1-682	GEM-16268	6TM-D68
C95	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274		4TM-P25
C96	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274		4TM-P25
C97	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274		4TM-P25
C98	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C99	.001 600V 10%		V84C6D1-10%		PM6D1	6DP-1-102	GEM-1621	6TM-D10
C100	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C101	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S10
C102	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S10
C103	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101		10TS-T10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R100	220K			
R101	1meg			
R102	82K			
R103	5600Ω			
R104	8200Ω			
R105	56K			
R106	22K			
R107	27K			
R108	2700Ω			
R109	22K			
R110	470K			
R111	130Ω 4W	PW5-130	5W-SQ-130	
R112	82Ω 2W			
R113	220K			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R114	10K			
R115	100K			
R116	100K			
R117	1800Ω			
R118	470K			
R119	47K			
R120	100K			
R121	100K			
R122	1meg			
R123	82K			
R124	56K			
R125	22K			
R126	27K			
R127	2700Ω			
R128	22K			
R129	470K			
R130	130Ω 4W	PW5-130	5W-SQ-130	
R131	470K			
R132	5600Ω			
R133	8200Ω			
R134	1meg			
R135	82K			
R136	5600Ω			
R137	8200Ω			
R138	56K			
R139	22K			
R140	27K			
R141	2700Ω			
R142	22K			
R143	470K			
R144	130Ω 4W	PW5-130	5W-SQ-130	
R145	470K			
R146	1200Ω 2W			
R147	82Ω 2W			
R148	2200Ω 2W			
R149	910Ω 4W	PW-5-910	5W-SQ-910	
R150	2200Ω 1W			
R151	470K			

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA RCA Victor PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L8	.240A	60Ω	4.3HY	108424		C-2334		C-15X	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA RCA Victor PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	117V@ 1.65A	640VCT @.240A DC	5V@ 3A	108419					
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @ 4.1A	6.3V@ 4.2A							

TRANSFORMER (AUDIO OUTPUT)

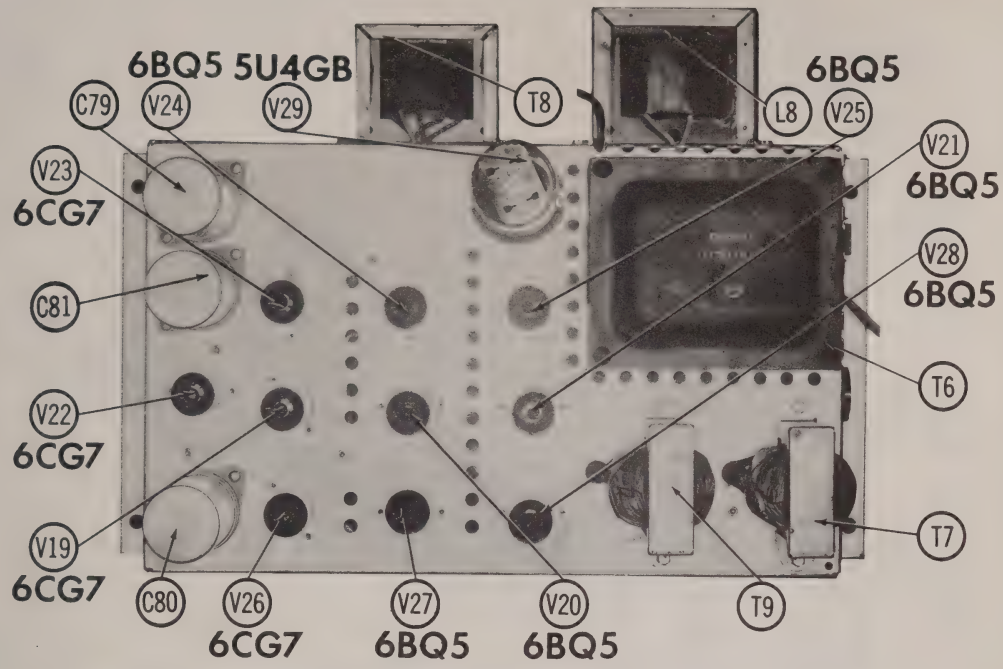
ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T7	8200Ω CT	3-4Ω	110148		A-3870	24S14	S-55X	① Drill New Mtg. Hole(s)
T8	8200Ω CT	3-4Ω	108421	A-2905	A-3880	24S16	S-55X①	
T9	8200Ω CT	3-4Ω	110148		A-3870	24S14	S-55X	

SPEAKER

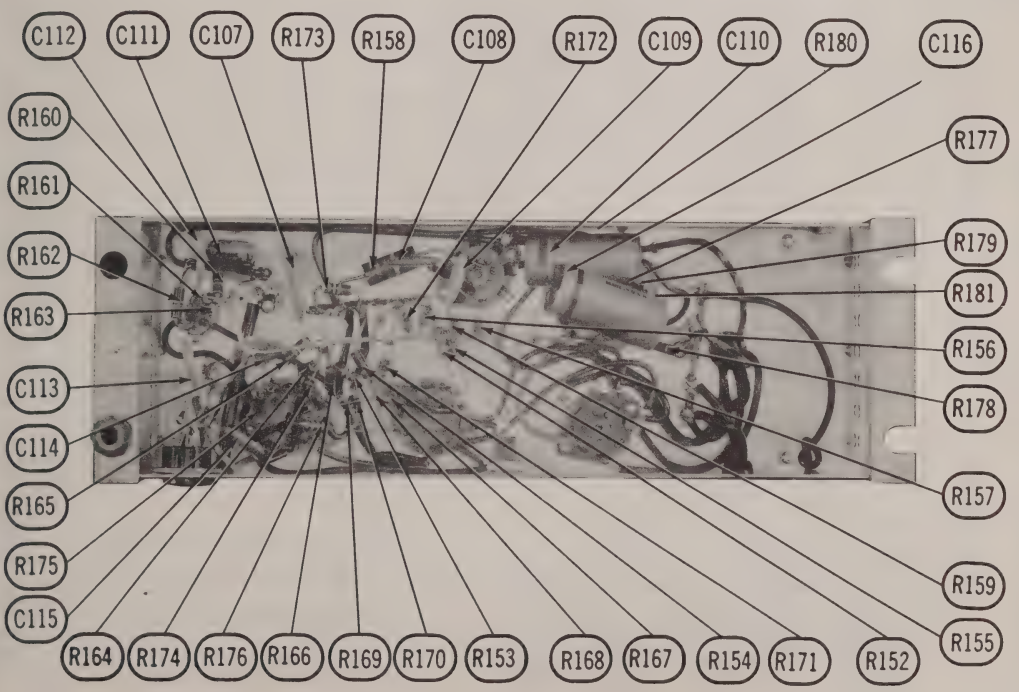
ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	QUAM PART No.	NOTES
SP6	5"x 7"	PM	3-4Ω	108975*	57A15	* Used in Models PVCR-45, -46, PVCR-84, RVCR-45, -46, RVCR-84, PVCRH-106, PVCRH-407, PVCRH-409
SP7	3½"	PM	6-8Ω	105395*	3A15TZ6.5	
SP8	15"	PM	3-4Ω	110141*	15A10LZ4	
SP9	5"x 7"	PM	3-4Ω	108975*	57A15	
SP10	3½"	PM	6-8Ω	105395*	3A15TZ6.5	

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M14	Switch	108457	Off-On (Part of Changer)



RS-183A AMP CHASSIS-TOP VIEW



REVERBERATION AMP CHASSIS-BOTTOM VIEW

REVERBERATION AMP PARTS LIST

TUBES

ITEM No.	USE	TYPE
V30	Left Channel AF Amp.- Cathode Follower- Right Channel AF Amp.- Cathode Follower	6CG7
V31	Reverb Driver	6C4
V32	Reverb Amp.	6CW4
V33	Left Channel Output- Right Channel Output	12AX7A
V34	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C105A	▲80	300	110222	AFH3-25-50	C0194		FP326.62	TMT-3703	TVL-3583
B	■80	300		PRS1780	BR8035		TC80	TD-40-150	TVA-1716
C	▲40	300							
D	40	150							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C106	.0068 10%		DI-6800		PM6D68	CCD-682	GEM-16268	10TS-D68
C107	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C108	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C109	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274		4TM-P25
C110	.0027 600V 10%		V84C6D3-10%		DPMS6D27	6DP-1-272	GEM-1623	6PS-D27
C111	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C112	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C113	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C114	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C115	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274		4TM-P27

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

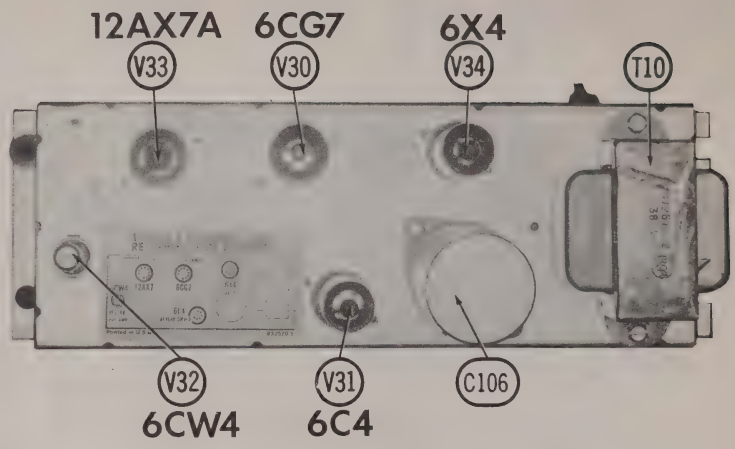
ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R152	470K			
R153	47K			
R154	1meg			Note 1
R155	2700Ω			
R156	2200Ω			
R157	470K			
R158	5600Ω 2W			
R159	100Ω			
R160	15K			
R161	470K			
R162	82K			
R163	120Ω			
R164	1meg			
R165	100K			
R166	2200Ω			
R167	27K			
R168	470K			
R169	47K			
R170	1meg			
R171	2700Ω			
R172	2200Ω			
R173	47K			
R174	100K			Note 1
R175	2200Ω			
R176	27K			
R177	220K			
R178	1meg			
R179	100K			
R180	470Ω			
R181	560Ω			

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA RCA Victor PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T10	117V@ .2A	460VCT @.020A DC	6.3VCT @1.9A	110221					

REVERBERATION AMP—TOP VIEW



CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	108414	AM, Green
Dial Pointer	108413	FM, Red
Lens	104540	Pilot Light, Models PVC18, PVC24, PVCR18, PVCR24, RVCR18, RVCR24, VC18, VC24, VCR18, VCR24
Pushbutton	110172	Preamp. Power, Models PVCR4, PVCR8
Knob	110170	Tuner Function, Preamp. Function, Bass, Treble; Models PVCR4, PVCR8, PVCRH Series
Knob	110045	Tuner Function, Bass, Treble, Balance; Models VC18, VC24, VCR18, VCR24, PVC18, PVC24, PVCR18, PVCR24, RVCR4, RVCR8, RVCR18, RVCR24
Knob	108460	Amp. Function, Models PVC18, PVC24, PVCR18, PVCR24, RVCR4, RVCR8, RVCR18, RVCR24, VC24, VCR18, VCR24, VC18
Knob	108509	FM-AM Tuning, Models PVCR18, PVCR24, RVCR4, RVCR8, RVCR18, RVCR24, VCR Series
Knob	110171	FM-AM Tuning, Models PVCR4, PVCR8, PVCRH Series, PVCR18, PVCR24, RVCR4, RVCR8, RVCR18, RVCR24
Knob	108746	Volume, Power On-Off; Models PVC18, PVC24, PVCR18, PVCR24, RVCR4, RVCR8, RVCR18, RVCR24, VC18, VC24, VCR18, VCR24
Knob	110194	Loudness, Model PVCR4, PVCR8, PVCRH Series
Knob	110169	Balance, Models PVCR4, PVCR8, PVCRH Series
Knob	110193	Reverberation, Models PVCR4, PVCR8, PVCRH Series, PVC18, PVC24, PVCR18, PVCR24, RVCR4, RVCR8, RVCR18, RVCR24
Knob	110234	Decorative, Models PVCRH-407, PVCRH-409
Knob	108479	Balance, Models PVC18, PVC24, PVCR18, PVCR24, RVCR4, RVCR8, RVCR18, RVCR24

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

ZENITH MODELS
169-128, 169-129

MODEL 169-128

ZENITH MODELS
169-128, 169-129

GENERAL INFORMATION

The Zenith Models 169-128 and 169-129 are four-speed record changers with a foldaway 45 rpm spindle. They will play a stack of records and automatically shut off after the last record has been played.

The major differences between the two models are the tone arms and motors. Model 169-128 has a chrome trimmed tone arm and a constant speed, 2-pole motor. Model 169-129 has a light weight tone arm and an induction-type motor.

These changers use the velocity-type tripping method.

Connect these changers to an outlet supplying 110-120 volts, 60 cycles AC only.

MANUFACTURED BY:

Zenith Radio Corporation
6001 Dickens Avenue
Chicago 39, Illinois

SET 569 FOLDER 15

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

CQ501

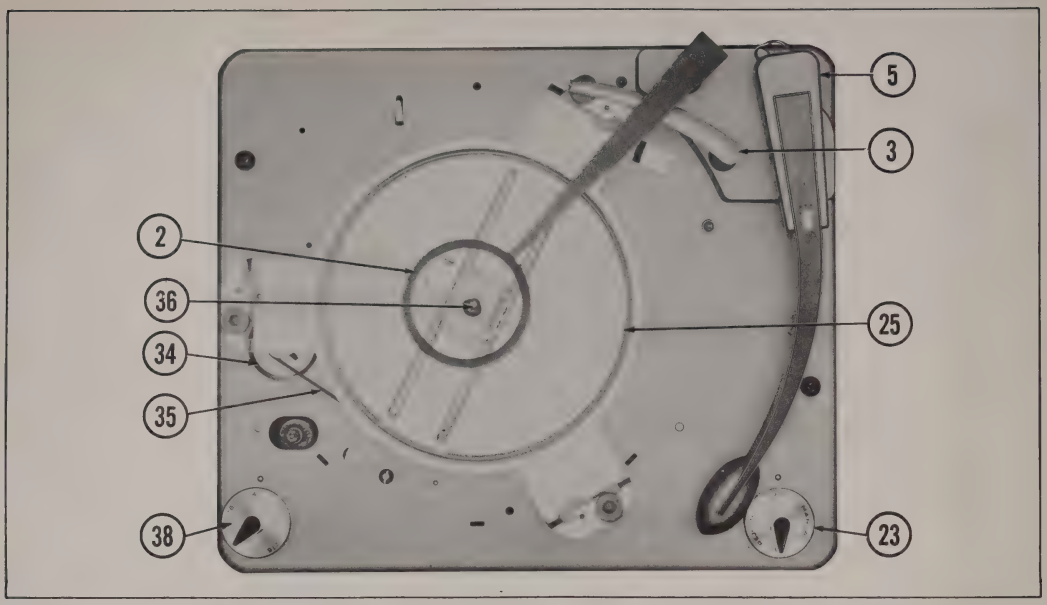


FIG. 1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED

OPERATING INSTRUCTIONS

Loading

1. Lift the record pressure arm (2) up and swing it to the right as far as it will go.
2. Place a stack of records on the spindle.
3. Hold the records level and replace the record pressure arm (2) on top of the records, except when using the 45 rpm spindle.

Starting

1. Turn the Reject-On-Off-Manual switch to On and select the correct speed.
2. Move the Reject-On-Off-Manual switch to Reject and release. A stack of records up to 7/8" high will play automatically and shut off after the last record is played.

Rejecting

To reject a record while the changer is operating, turn the Reject-On-Off-Manual switch to Reject and release.

Stopping

1. Turn the Reject-On-Off-Manual switch to the Off position.
2. Lift the tone arm from the records and place it on its rest post.

45 RPM Automatic Foldaway Spindle

1. Lift up on the spindle and bring the two halves together.
2. Turn the Reject-On-Off-Manual switch to the On position.
3. Lift and rotate the record pressure arm (2) fully counterclockwise.
4. Rotate the speed selector to the 45 rpm position.
5. Select the correct stylus.
6. Place a stack of 45 rpm records up to 7/8" high on the spindle.
7. Turn the Reject-On-Off-Manual switch to Reject and release. After the last record has been played, the changer will shut off automatically.

Manual Operation

1. Lift and rotate the record pressure arm fully counterclockwise.
2. Place a record on the spindle and lower it to the turntable.
3. Rotate the speed selector to the correct speed.
4. Select the correct stylus.
5. Turn the Reject-On-Off-Manual switch to the Manual position.
6. Pick the tone arm up and place it on the record.
7. When the record is finished playing, pick the tone arm up and place it on its rest post. Turn the Reject-On-Off-Manual switch to the Off position.

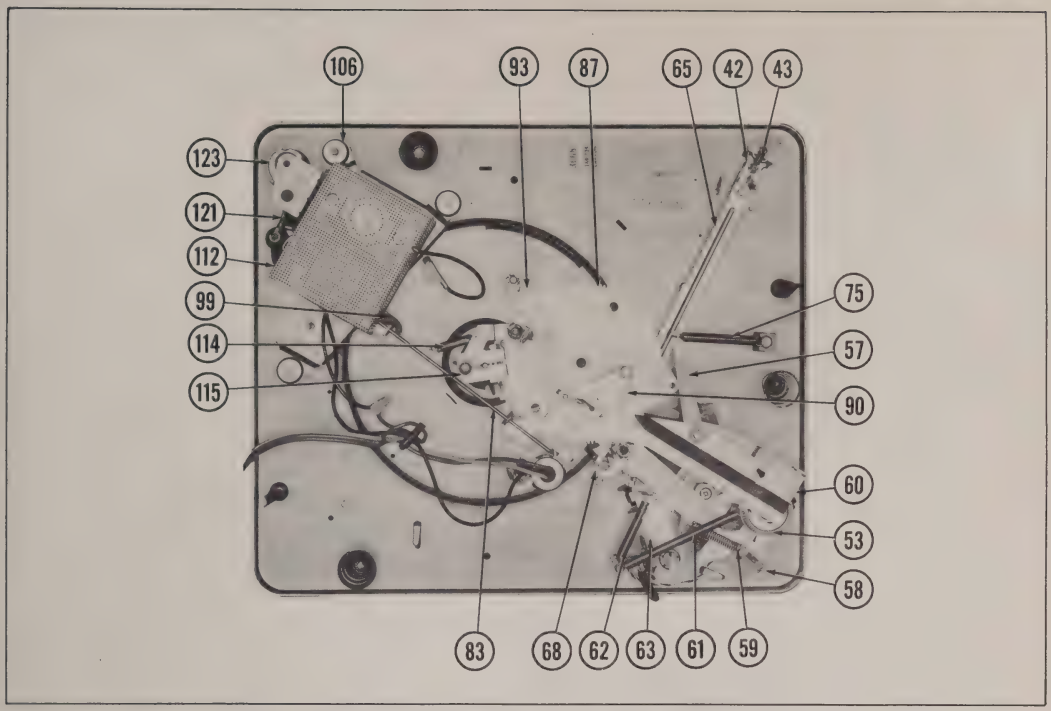


FIG.2 BOTTOM VIEW OF MECHANISM

CHANGE CYCLE

It is recommended that the change cycle operation be observed by rotating the turntable by hand. The action described below can then be readily followed and the function of each part more easily understood.

These changers are provided with a velocity trip mechanism. The change cycle is started by the faster inward motion of the tone arm when the needle enters the trip grooves at the end of the record.

While a record is playing, the blank spot on the clutch gear (87) is next to the turntable hub. The tone arm's (5) inward motion moves the trip link (47) inward and this pushes the friction lever closer to the turntable hub. The lug in the turntable hub contacts the trip dog lever (85). The lug just touches the trip dog lever (85) and is pushed away by each revolution of the turntable while a record is being played. The faster movement of the tone arm when it enters the trip grooves of a record is enough to move the trip dog lever (85) in front of the lug so the lug contacts the trip dog lever (85) and causes the clutch gear (87) to rotate to start a change cycle.

The control link (65) is moved forward and causes the trip dog lever (85) to move rapidly when the function switch is moved to the reject position.

As the clutch gear (87) begins to rotate, the drive stud on the clutch gear (87) causes the lift lever (60) to pivot on its stud due to the tension on spring (61). The lift pin (19) is pushed upward to raise the tone arm from the record due to the shape of the rear of the lift lever (60).

The drive link (58) is attached to the drive stud and is pulled forward and around the clutch gear (87). The drive link (58) is attached to the index lever (45) which moves the tone arm yoke and bushing assembly (51). The tone arm yoke (51) and tone arm swivel bracket and shaft assembly (17) are fastened together by a set screw. As the index lever (45) is pulled forward by the clutch gear (87), the tone arm and swivel bracket move outward. While the clutch gear continues to rotate, the tone arm and swivel bracket remain in the outward position until the next record is dropped.

The index lever (45) is now pulled backward by the drive stud and in turn pulls the tone arm inward to set down on the record. The inward movement of the tone arm depends upon where the index lever (45) strikes the discriminator plate (62). This depends on how far inward the feeler arm (3) is allowed to go to position the discriminator plate (62).

As clutch gear (87) rotates, the drive stud follows the cut-out in the ejector cam (93). When the drive stud reaches the end of the cut-out it causes the ejector cam (93) to pivot outward pulling the ejector link and lever assembly (115). This causes the ejector cam (93) to rotate and push the bottom record off the record shelf and onto the turntable.

As the clutch gear (87) starts to rotate, the eccentric stud pulls the drive link (58) forward. An arm on the drive link pulls the activating lever (72) and feeler arm (3) forward. The magnet assembly and discriminator plate (49) are pulled forward until the feeler arm (3) contacts a record on the spindle

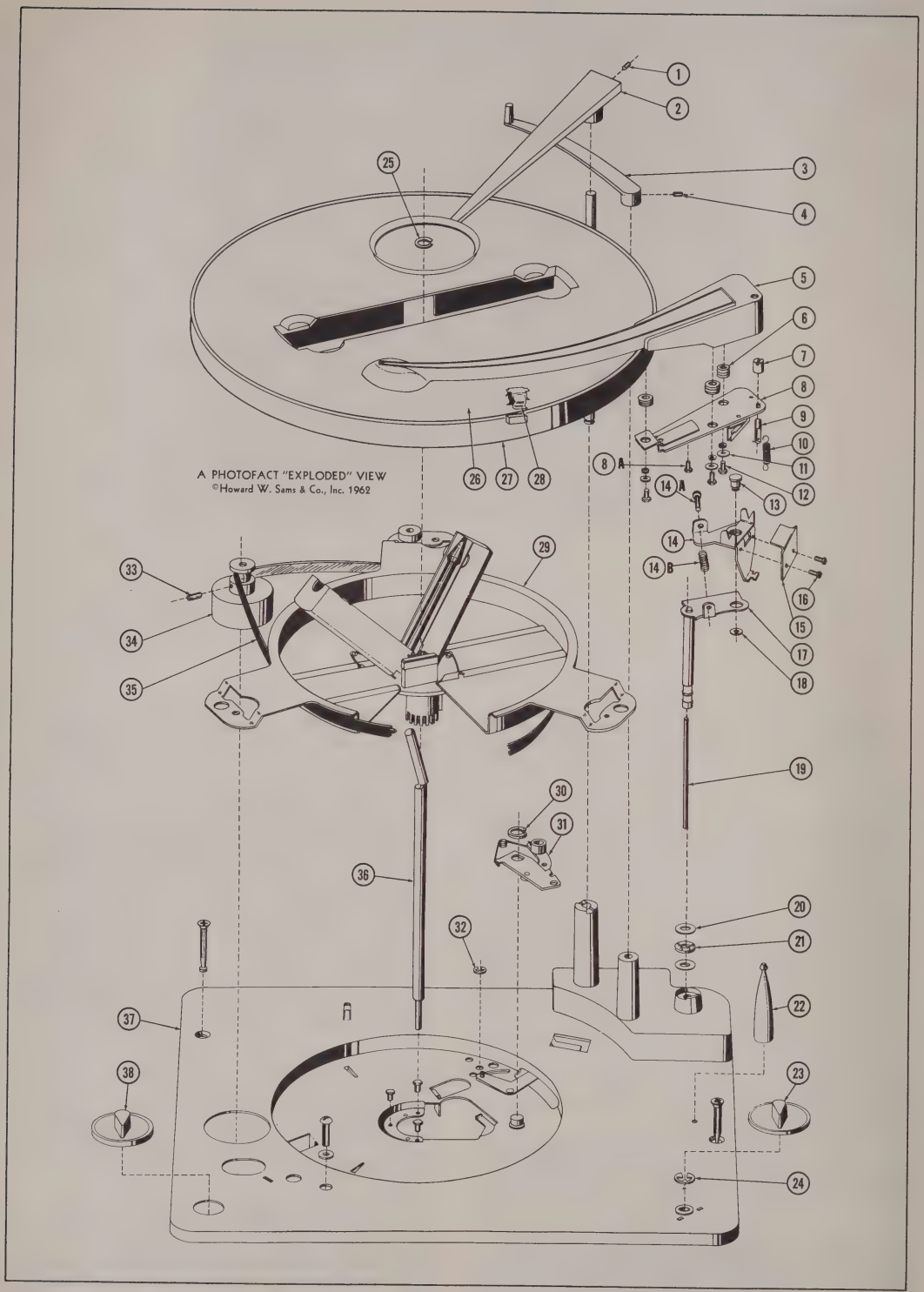


FIG.3A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

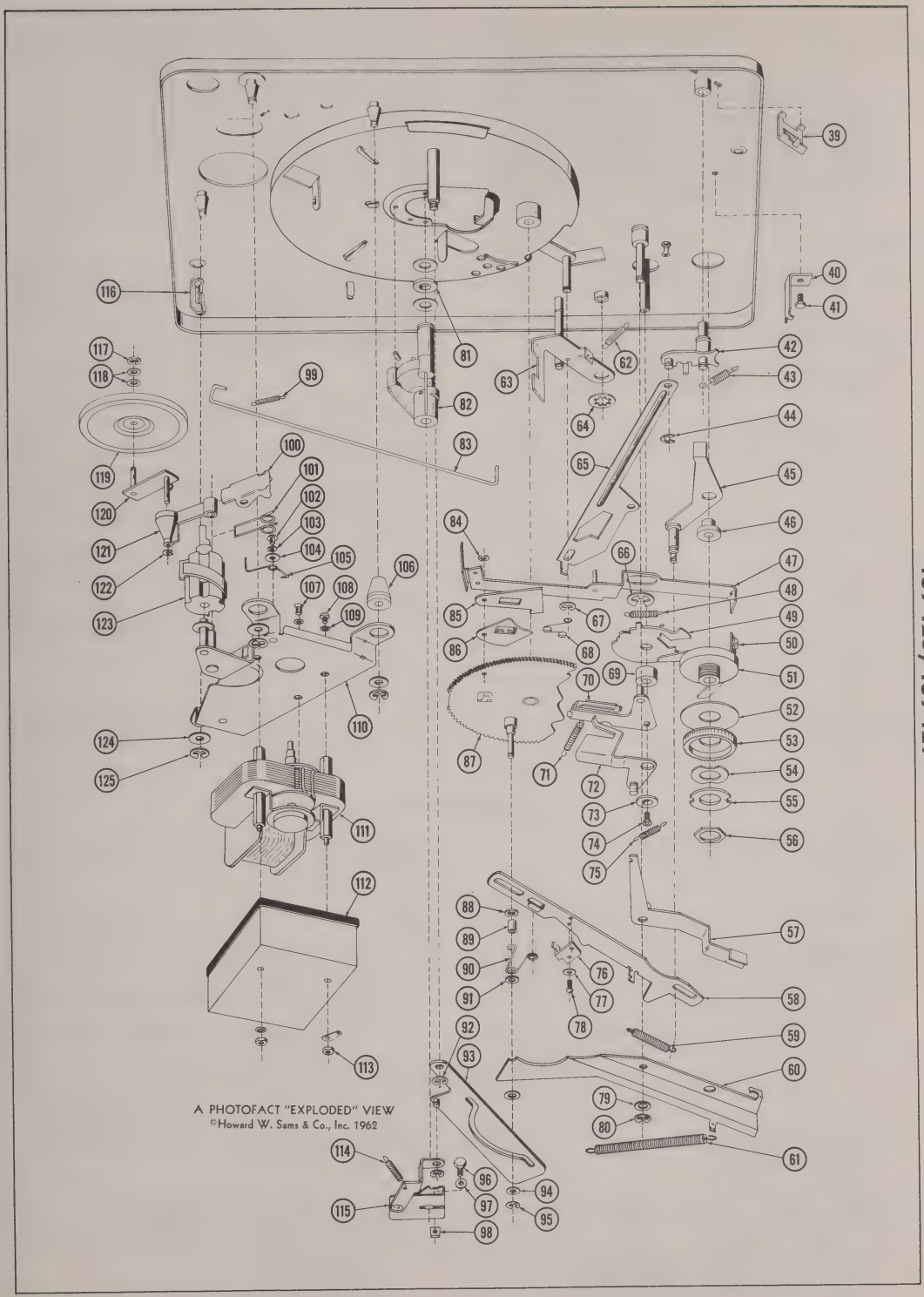


FIG. 3 B EXPLODED VIEW OF PARTS BELOW BASEPLATE

shelf. The discriminator plate (49) stops at this point and the feeler arm (3) and magnet assembly return to their positions. When a 12" record is being changed, the discriminator lever (63) is pulled against the stop at the discriminator plate (49). As the tone arm (5) moves in to set down on the record, the index lever (45) strikes the discriminator plate (49) for the 12" record setdown. When a 10" record is being changed, the index lever (45) strikes the first notch of the discriminator plate (49) for the tone arm setdown. When a 7" record is being changed, the index lever (45) strikes the second notch of the discriminator plate (49) for correct tone arm setdown. After the last record has been played, the index lever (45) strikes the third notch of the discriminator plate (49). This prevents the tone arm from moving in over the record and prevents the drive link (58) from moving outward.

As the clutch gear (87) rotates, it causes the drive link bracket (76) to contact the switch lever forcing it back and tripping the On-Off switch. At the same time, the tone arm is lowered to its rest post.

ADJUSTMENTS

Set-Down

NOTE: Adjust with 10- or 12-inch record.

1. Lift the tone arm up so adjusting screw (14A) is accessible.
2. To move the tone arm out or away from the spindle, turn adjusting screw (14A) clockwise.
3. To move the tone arm in or toward the spindle, turn adjusting screw (14A) counterclockwise.

Tone Arm Height

1. Lift the tone arm up so the height adjusting screw (8A) is accessible.
2. Turn the adjusting screw (8A) inward to decrease the height and outward to increase the height.
3. The height is properly adjusted when the tone arm misses the bottom record on the spindle shelf by 1/8" during the first part of the change cycle.

Velocity Trip

A slight adjustment of cam (50) on tone arm yoke (51) will give more or less push on the trip link (47). This adjustment must be checked to make sure the trip dog lever (84) is pushed in front of the lug on the turntable hub for the changer to trip properly.

Push-Off

1. Loosen the 5/16" hex head bolt.
2. Push the function switch to reject and release.
3. Rotate the turntable slowly by hand until the drive stud on the clutch gear (87) is at midposition in the cut-out in the ejector cam (93).
4. Push the spindle shaft up as far as it will go and turn to its maximum counterclockwise position.
5. Lower the ejector lever clamp about 1/32" below the turntable hub housing and tighten the 5/16" hex head bolt.
6. Complete the change cycle.
7. Place a record on the spindle shelf and check to see if the ejector cam protrudes into the center hole of the record.

LUBRICATION

A periodic check should be made to ensure that the changer is lubricated adequately.

All sliding levers should be lubricated with a good quality grease where they slide on their pivots and against each other.

TROUBLE CHART

Symptom	Cause	Remedy
Turntable does not rotate when the Reject-On-Off-Manual switch is turned to On.	1. Defective motor (111). 2. No current to motor (111). 3. Motor pulley loose on motor shaft. 4. Turntable drive belt (35) broken or off the turntable.	1. Replace the motor (111). 2. Check the electrical wiring for breaks or poor solder joints. 3. Reposition motor pulley and tighten set screws. 4. Replace turntable drive belt (35).
Tone arm strikes records on spindle when it rises.	1. Tone arm height is not adjusted properly.	1. See "Tone Arm Height" under Adjustments.
Record does not drop when changer cycles.	1. Record ejector cam not adjusted properly.	1. See "Push-Off" under Adjustments.
Speed change knob does not detent on the speed position.	1. Detent spring (105) off or broken.	1. Replace spring (105).

Symptom	Cause	Remedy
Cartridge drags on record.	1. Needle bent. 2. Cartridge mounting screws loose.	1. Replace needle. 2. Tighten screws.
Changer does not trip.	1. Trip dog lever (85) does not contact the trip lug on turntable hub.	1. Adjust cam (50) on tone arm yoke (51) so trip link (47) will push trip dog lever (85) to make firm contact with the trip lug.
Records on the spindle shelf do not drop to the turntable.	1. Ejector lever (115) not adjusted properly.	1. See "Push-Off" under Adjustments.
Stylus does not set down on the lead-in groove on the record.	1. Tone arm misadjusted.	1. See "Set-Down" under Adjustments.
Tone arm yoke and bushing assembly (51) does not move with the tone arm swivel bracket and shaft assembly (17).	1. Set screws loose.	1. Reposition tone arm yoke and bushing assembly and tighten the set screws.
Distortion of recorded sound.	1. Defective record. 2. Defective amplifier. 3. Defective cartridge. 4. Defective needle.	1. Replace record. 2. Check amplifier and speaker. 3. Replace. 4. Replace.
No sound during playing.	1. Defective cartridge. 2. Defective wiring. 3. Defective amplifier. 4. Loose cartridge terminal clips.	1. Replace 2. Check pick-up leads for a shorted or open lead. 3. Check amplifier and speaker. 4. Remove, squeeze together slightly, and replace.
Noise during playing of record.	1. Motor rumble.	1. If a low-pitched rumbling sound comes from the loud-speaker while a record is playing, check motor grommets to be sure the motor is freely suspended on them. The motor lead wires should have slack to allow the motor to float. Motor rumble may also come from an unbalanced motor rotor; in this case, replace the motor.
	2. Defective idler wheel (119).	2. A rapid thumping sound while the motor is running may indicate a flat spot on the idler wheel (119). If this condition does not clear up after ten minutes running time, check the rubber tire on the idler wheel. If the surface of the rubber tire is not smooth and even or the idler wheel bearing shows signs of excessive wear, replace the idler wheel.
	3. Defective record.	3. Worn or defective records cause needle scratch and distortion of recorded sound. If a record is warped, it may slip on other records causing "Wow". An enlarged hole in the record can also cause "Wow".
	4. Squeaks.	4. Squeaking sound as changer operates, indicates lack of lubrication.
Pickup lands on record and jumps the first few grooves.	1. Stylus worn or wrong size. 2. Changer not level. 3. Pick-up leads binding pick-up arm.	1. Make sure the stylus is set for the type records being played. If worn, replace. 2. Level changer. 3. Make sure the pick-up leads are free and have enough slack to allow the pick-up arm to move freely.
Tone arm does not set down onto the record.	1. Stylus pressure too light. 2. Tone arm lifting rod (19) binding.	1. Adjust stylus pressure to not more than 7 grams. 2. Lubricate lifting rod (19) with thin oil and move up and down several times.

Ref. No.	Part No.	Description
1	73-114	Slab Head Screw (2)
2	148-162	Pressure Arm (169-128)
	148-167	Pressure Arm (169-129)
3	118-67	Feeler Link
4	73-158	Bristol Head Set Screw
5	S50280	Tone Arm Shell with Trim(169-128)
	S51095	Tone Arm Shell with Trim(169-129)
6	125-107	Rubber Grommet
7	54-496	Tone Arm Adjustment Nut
8	S49590	Hinge, Plate Assembly
8A	112-1304	Height Adjustment Screws
9	97-396	Tone Arm Spring Stud
10	80-1390	Pressure Adjustment Spring
11		Washer
12	114-756	Tone Arm Mounting Screw
13	12-2955	Tone Arm Hinge Bracket
14	S49589	Tone Arm Hinge & Adjustment Bracket Assembly
14A	112-1355	Set-Down Adjustment Screw
14B	80-609	Set-Down Adjustment Spring
15	12-2954	Retainer Bracket
16	114-252	4-40 x 3/16 x 3/16 Hex Hd. Screws
17	S49575	Tone Arm Swivel Brkt. & Shaft Assembly
18	54-508	Tinnerman Speed Nut
19	56-424	Tone Arm Lift Pin
20	93-1441	Bearing Washer (2)
21	6-76	Tone Arm Shaft Bearing
22	84-79	Tone Arm Rest (169-128)
	84-80	Tone Arm Rest (169-129)
23	46-2587	Function Selector Knob (169-129)
24	188-266	Retaining Ring (2) (169-128)
	188-140	Retaining Ring (169-129)
25	188-264	Turntable Retaining Ring
26	29-50	Turntable Pad (169-128)
	29-51	Turntable Pad (169-129)
27	S49591	Turntable & Stud Assembly
28	19-384	Tone Arm Rest Clip
29	S49596	Turntable Support & Hub Ass'y.
30	188-147	Retaining Ring
31	S49577	Plate & Roller Assembly
32	188-129	Retaining Ring for AC Switch
33	73-156	4-40 x 3/16 Allen Hd. Set Screw
34	S49897	Pulley & Bearing Assembly
35*	32-40*	*Turntable Drive Belt
36	S49856	Spindle Assembly
37	S49606	Base Plate Assembly (169-128)
	S51098	Base Plate Assembly (169-129)
38	46-2425	Control Knob (169-128)
	46-2588	Speed Selector Knob (169-129)
39	12-2949	Detent Bracket
40	12-2951	Brake Spring Bracket
41	114-762	10-16 x 1/2 x 5/16 Hex Hd. Screw
42	S51483	Control Knob Shaft & Lever Ass'y. (169-128)
	S50914	Control Knob Shaft & Lever Ass'y. (169-129)
43	80-1387	Detent Bracket Spring
44	188-128	Retaining Ring
45	S49586	Index Lever & Stud Ass'y.
46	94-1082	Tone Arm Shaft Bushing
47	S49582	Trip Link & Stud Ass'y.
48	80-1397	Brake Arm Tension Spring
49	57-2972	Discriminator Plate
50	97-590	Eccentric Stud
51	S52475	Tone Arm Yoke & Bushing Ass'y.
52	93-1462	Washer
53	94-1142	Brake Bushing
54	93-1142	Spring Washer
55	54-518	Nut
56	54-517	Brake Bushing Nut

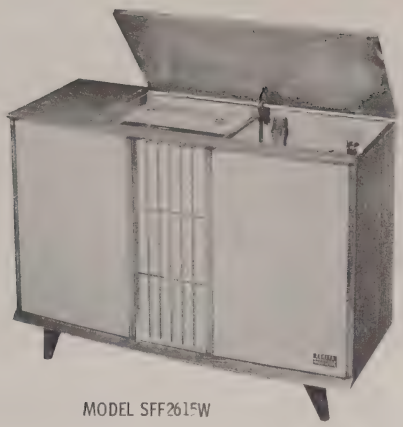
Ref. No.	Part No.	Description
57	S49581	Brake Arm & Bushing Ass'y.
58	118-65	Drive Link
59	80-1426	Index Lever Spring
60	S49579	Lift Lever & Bushing Ass'y.
61	80-1383	Lift Lever Spring
62	80-1386	Discriminator Lever & Plate Spring
63	117-251	Discriminator Lever
64	188-265	Retaining Ring
65	S50964	Control Link & Stud Ass'y.
66	188-137	Retaining Ring
67	188-259	Retaining Ring
68	80-1385	AC Switch Spring
69	94-1085	Spacer Bushing
70	S49576	Clutch Bracket & Magnet Ass'y.
71	80-1384	Magnet Return Spring
72	S49587	Activating Lever & Stud Ass'y.
73	94-1083	Activating Lever Bushing
74	113-130	5-40 x 5/16 Phillips Flat Hd. Screw
75	80-613	Activating Lever Spring
76	12-3125	Drive Link Bracket
77	93-1420	.020 x .128 x 5/16 Steel Washer
78	113-133	4-40 x 3/16 Phillips Head Screw
79	93-903	.016 x .194 x 7/16 Steel Washer
80	188-128	Retaining Ring
81	93-1440	Bearing Washer
82	S49588	Gear Housing & Sleeve Ass'y.
83	66-117	Idler Push Rod
84	188-168	Retaining Ring
85	117-254	Trip Dog Lever
86	117-255	Friction Lever
87	S49580	Clutch Gear Ass'y.
88	188-128	Retaining Ring
89	94-1079	Lift Lever Contact Roller
90	80-813	Drive Link Tension Spring
91	93-1420	.020 x .128 x 5/16 Steel Washer
92	188-128	Retaining Ring
93	S52562	Ejector Cam & Stud Ass'y.
94	93-1420	.020 x .128 x 5/16 Steel Washer
95	188-168	Retaining Ring
96	114-736	10-32 x 7/8 x 5/16 Hex Hd. Bolt
97	93-1420	.020 x .128 x 5/16 Steel Washer
98	54-317	10-32 x 3/8 Square Nut
99	80-613	Spring
100	12-2956	Detent Bracket
101	80-1399	Idler Spring
102	113-9	8-32 x 1/4 x 1/4 Hex. Hd. Steel Screw
103	93-767	Washer
104	93-903	.016 x .194 x 7/16 Steel Washer
105	80-1400	Detent Tension Spring
106	125-91	Grommet
107	71-2	6-32 x 5/16 Flat Head Screw
108	113-15	6-32 x 5/16 Hex Head Screw
109		Lockwasher
110	S49641	Motor Bracket & Stud Ass'y.
111	141-165	Motor
112	126-944	Motor Shield
113	54-12	6-32 x 5/16 Hex Nut
114	80-1388	Ejector Spring
115	S49578	Ejector Link Ass'y.
116		Mounting Lock
117	188-164	Retaining Ring
118		Washers (2)
119	61-228	Idler Wheel
120	S49639	Idler Support & Stud Ass'y.
121	118-70	Cam Link
122	188-129	Retaining Ring
123	128-76	Speed Control Cam
124	93-921	.032 x .195 x 9/16 Steel Washer
125	188-128	Retaining Ring

* WALSCO Part No. 41-050

PHOTOFACT® Folder

ZENITH CHASSIS 2F30, 3F21, 3F23, 7F30

ZENITH CHASSIS 2F30,
3F21, 3F23, 7F30

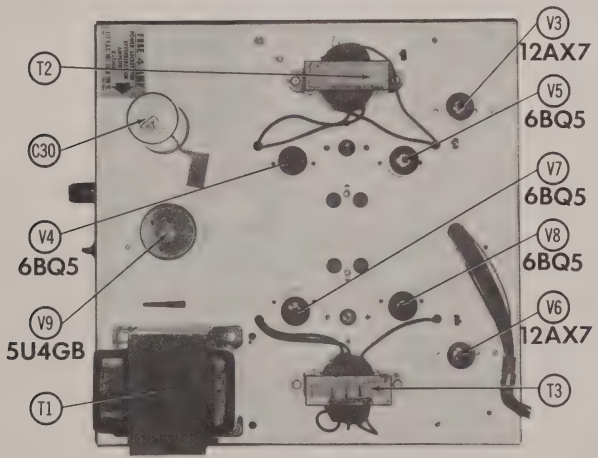


MODEL SFF2615W

TRADE NAME	Zenith Models FV22 (Reverberation Ch. 3F23), SFF2515ET, SFF2515RT, SFF2515WT Preamp. Ch. 2F30, Amp. Ch. 7F30, Reverberation Ch. 3F21 *(FM-AM Tuner Ch. 7F20 may be used. Models SFF2615E, SFF2615R, SFF2615W Preamp. Ch. 2F30, Amp. Ch. 7F30, Reverberation Ch. 3F21 or 3F23 *(FM-AM Tuner Chassis 7F20)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	AC Operated 2 Tube Stereo Preamplifier, 7 Tube Stereo Amplifier, 3 Tube Reverberation Unit and 4 Speed Automatic Record Changer
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 160 Watts, 1.5 Amp. @117 Volts AC (Less Motor) 135 Watts, 1.3 Amp. @117 Volts AC (Amp. Only) 25 Watts, .2 Amp. @117 Volts AC (Reverb Only)

* FOR SERVICE INFORMATION ON FM-AM TUNER CHASSIS 7F20 — SEE PHOTOFACT SET 558 FOLDER 16

FOR SERVICE INFORMATION ON RECORD CHANGER #169-135 — SEE SIMILAR V-M 1586 — PHOTOFACT SET 527 FOLDER 14



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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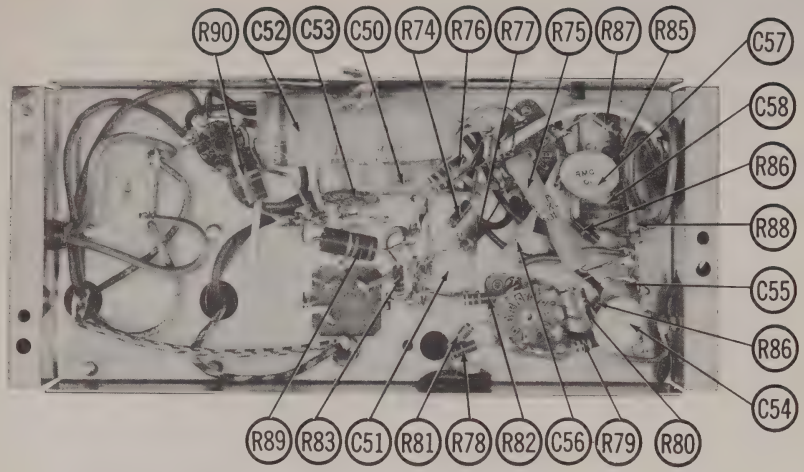
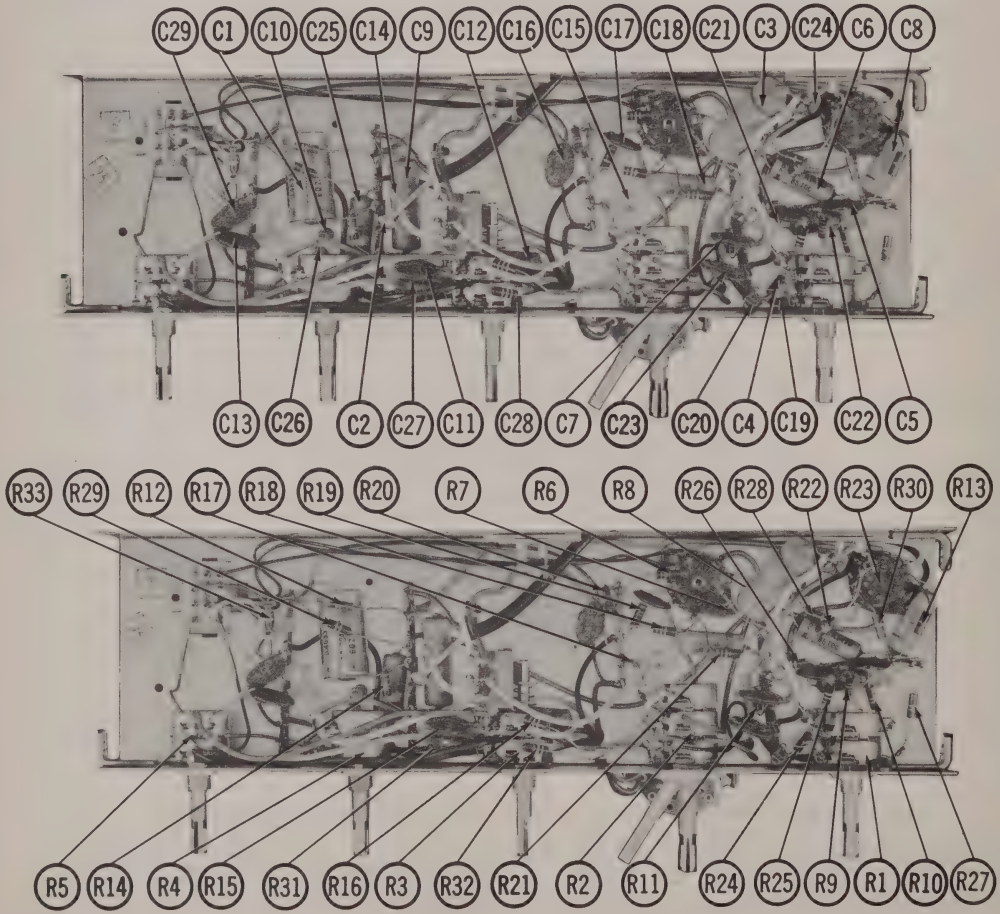
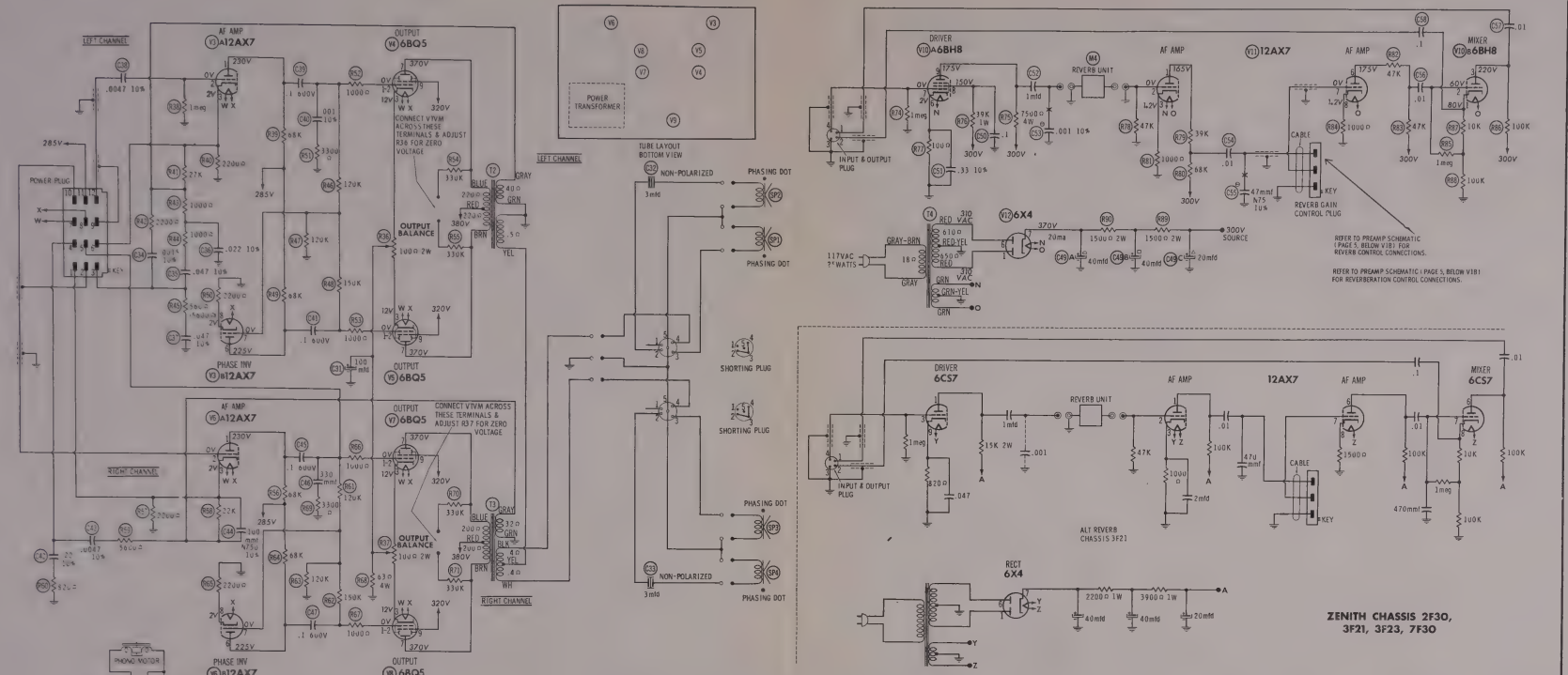
SET 569 FOLDER 16



REVERBERATION AMP CHASSIS



PREAMP CHASSIS-BOTTOM VIEW



RESISTANCE READINGS (Cont.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V3	12AX7	†73K	1meg	2200Ω	FIL	FIL	†73K	120K	2200Ω	FIL
V4	6BQ5	NC	240K	115Ω	FIL	FIL	NC	†220Ω	NC	†2000Ω
V5	6BQ5	NC	270K	115Ω	FIL	FIL	NC	†220Ω	NC	†2000Ω
V6	12AX7	†73K	68K	2200Ω	FIL	FIL	†73K	120K	2200Ω	FIL
V7	6BQ5	NC	240K	115Ω	FIL	FIL	NC	†200Ω	NC	†2000Ω
V8	6BQ5	NC	270K	115Ω	FIL	FIL	NC	†200Ω	NC	†2000Ω
V9	5U4GB	NC	¶ INF	NC	36Ω	NC	34Ω	TP	¶ INF	
V10	6BH8	110K	1.1meg	†103K	FIL	FIL	100Ω	620K	†42K	†10K
V11	12AX7	†110K	47K	1000Ω	FIL	FIL	†97K	0Ω	1000Ω	FIL
V12	6X4	650Ω	NC	FIL	FIL	NC	610Ω	¶ INF		

ALL MEASUREMENTS MADE IN "STEREO" POSITION WITH DELAY LINE DISCONNECTED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V9.
† MEASURED FROM PIN 7 OF V12.
NC NO CONNECTION
TP TIE POINT

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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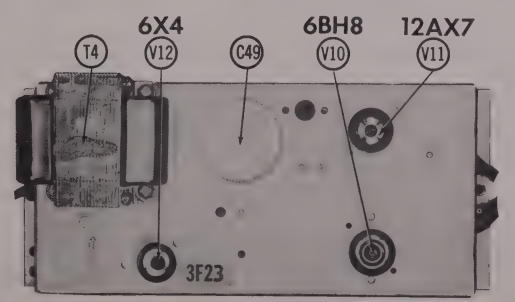
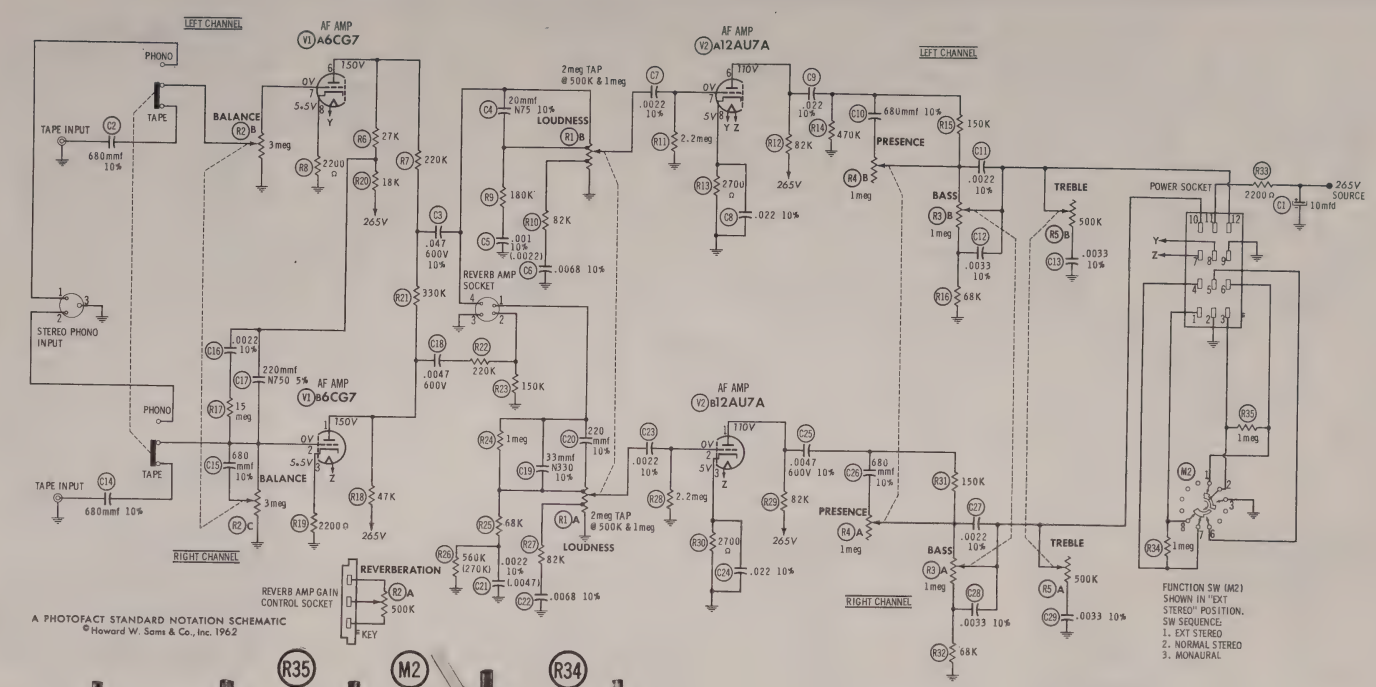
AMP-REVERBERATION SCHEMATIC



REVERB. CHASSIS-TOP VIEW



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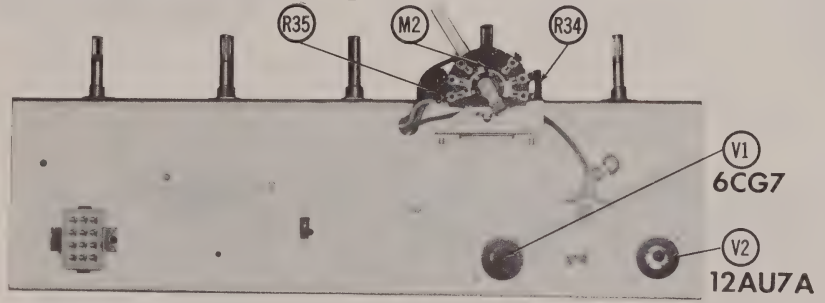


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CG7	↑54K	3meg	2200Ω	FIL	FIL	↑52K	3meg	2200Ω	NC
V2	12AU7A	↑89K	2.2meg	2700Ω	FIL	FIL	↑89K	2.2meg	2700Ω	FIL

↑ MEASURED FROM PIN 8 OF V9.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

ZENITH CHASSIS 2F30, 3F21, 3F23, 7F30

PREAMP

ZENITH CHASSIS 2F30, 3F21, 3F23, 7F30
FOLDER 16

PREAMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	6CG7	V2	Left Channel AF Amp. - Right Channel AF Amp.	12AU7A

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	10	350	22-2943	PRS1620	BR1045	QT1-6	TC62	TD-10-450	TVA-1604

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C3	.047 600V 10%		V84C6S47-10%		PM6S47	6DP-3-473	GEM-1615	6TM-S47
C4	20 N75 10%	#22-3139				*		
C5	.001 10%	(.0022) †	DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C6	.0068 200V 10%		V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C7	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C8	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C9	.022 600V 10%		V84C6S22-10%		PM6S22	6DP-2-223	GEM-1612	6TM-S22
C10	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C11	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C12	.0033 200V 10%		V84C4D33-10%		PM6D33	6DP-1-332	JL-233	6TM-D33
C13	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C14	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C15	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C16	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C17	220 N750 5%		N750-DI 220	DTN-220	C10T22	CCTN-221	CNO-322	10TCU-T22
C18	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	JL-247	6TM-D47
C19	33 N330 10%	#22-2863				*		10TCS-Q33
C20	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C21	.0022 10%	(.0047) †	DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C22	.0068 200V 10%		V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C23	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C24	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C25	.0047 600V 10%		V84C6D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C26	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C27	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C28	.0033 200V 10%		V84C2D33-10%		PM6D33	6DP-1-332	JL-233	6TM-D33
C29	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33

Zenith Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Loudness, Right Channel	2meg ①	63-4638	BT-175, STR-175, or (ABT-175, STR-175, AK-11)			FA26DT16, RU26DT16, CS3500
B	Loudness, Left Channel	2meg ①					
R2A	Reverberation	500K	63-4739				
B	Balance, Left Channel	3meg					
C	Balance, Right Channel	3meg					
R3A	Bass, Right Channel	1meg	63-4649				
B	Bass, Left Channel with Phono-Tape-Switch	1meg					
R4A	Presence, Right Ch.	1meg	63-4731	B-68, SR-68, or (AB-68, SR-68, AK-11)			FA16R, RU16R, CS3500
B	Presence, Left Ch.	1meg					
R5A	Treble, Right Channel	500K	63-4418	B-60, SR-60, or (AB-60, SR-60, AK-11)	AD47-500K-Z/ KSS-3		FA55A, RU55A, CS3500
B	Treble, Left Channel	500K					

① Taps @ 500K & 1meg.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	27K				R21	330K			
R7	220K				R22	220K			
R8	2200Ω				R23	150K			
R9	180K				R24	1meg			
R10	82K				R25	68K			
R11	2, 2meg				R26	560K			(270K)*
R12	82K				R27	82K			
R13	2700Ω				R28	2, 2meg			
R14	470K				R29	82K			
R15	150K				R30	2700Ω			
R16	68K				R31	150K			
R17	15meg				R32	68K			
R18	47K				R33	2200Ω			
R19	2200Ω				R34	1meg			
R20	18K				R35	1meg			

* Alternate.

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	ZENITH PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	142-10	Not Req.	17D	Not Req.	26SD	2604 *	8TA4-SD	N-8TA-SD*	
						2605 *			

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Switch 45RPM Spindle	85-678 S-46112	Monaural-Stereo (Rotary Type, Lever Operated)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	46-2263	Loudness, Presence, Treble
Knob	S-51122	Bass
Knob	S-48043	Reverberation
Knob	46-2284	Balance
Knob	46-2586	Monaural-Stereo
Cabinet	14-3324	Model SFF2515WT
Cabinet	14-3325	Model SFF2515RT
Cabinet	14-3326	Model SFF2515ET
Cabinet - Leg	96-257	Left, Model SFF2515WT
Cabinet - Leg	96-258	Right, Model SFF2515WT
Cabinet - Leg	96-259	Left, Model SFF2515RT
Cabinet - Leg	96-260	Right, Model SFF2515RT
Cabinet - Leg	96-261	Left, Model SFF2515ET
Cabinet - Leg	96-262	Right, Model SFF2515ET

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V3	Left Channel AF Amp. - Phase Inverter	12AX7	V6	Right Channel AF Amp. - Phase Inverter	12AX7
V4	Left Channel Output	6BQ5	V7	Right Channel Output	6BQ5
V5	Left Channel Output	6BQ5	V8	Right Channel Output	6BQ5
			V9	Rectifier	5U4GB

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C30A	■40	450	22-3106	AFH4-18-45	C0370	XC3-32	WP447.7	TMT-3763	TVLS-3793.2*
B	▲80	450							
C	▲40	450							
C31	100	25	22-3320	PRS1270	BBR100-25	QT1-23	TC2501	TD-100-25	TVA-1207
C32	3	30NP	22-2945	PRS7405	BBR4-150	NPQT-1	TCN503		TVANS-1215*
C33	3	30NP	22-2945	PRS7405	BBR4-150	NPQT-1	TCN503		TVANS-1215*

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C34	.0015 200V 10%		V84C4D15-10%		PM6D15	6DP-1-152	GP215	6TM-D15
C35	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C36	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C37	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C38	.0047 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C39	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C40	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C41	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C42	.22 200V 10%		V84C2P22-10%		PM2P22	2DP-4-224	GEM-2022	2TM-P22
C43	.0047 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C44	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C45	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C46	330		SI 330	D6-331	L10T33	CCD-331	B-333	10TS-T33
C47	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C48	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R36	Output Balance, Left Channel	100Ω(2W)	63-4468	WN-101	A43-100/FKS-1/4	WPK 100	R100L
R37	Output Balance, Right Channel	100Ω(2W)	63-4468	WN-101	A43-100/FKS-1/4	WPK 100	R100L

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R38	1meg			
R39	68K			
R40	2200Ω			
R41	27K			
R42	2200Ω			
R43	1000Ω			
R44	1000Ω			
R45	560Ω			(5600Ω)*
R46	120K			
R47	120K			
R48	150K			
R49	68K			
R50	2200Ω			
R51	3300Ω			
R52	1000Ω			
R53	1000Ω			

RESISTORS (cont)

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R54	330K			
R55	330K			
R56	68K			
R57	2200Ω			
R58	22K			
R59	5600Ω			
R60	820Ω			
R61	120K			
R62	150K			
R63	120K			
R64	68K			
R65	2200Ω			
R66	1000Ω			
R67	1000Ω			
R68	33Ω 4W	PW5-63	5W-SQ-63	
R69	3300Ω			
R70	330K			
R71	330K			
R72	2700Ω 1W			
R73	2000Ω 3W	PW3-2000	3W-SQ-2000	

* Alternate.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ 1.3A	660VCT @.170A DC	5V@ 3A	95-1785					
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @4.7A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5300Ω CT	6-8Ω	95-1698					
		SEC. 2						
		65Ω						
		SEC. 1						
T3	5000Ω CT	12.8Ω CT	95-1699					
		SEC. 2						
		30Ω						

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	ZENITH PART No.	QUAM PART No.	NOTES
SP1	12"	PM	6-8Ω	49-903	12A6AZ6.4	
SP2	5 1/4"	PM	3-4Ω	49-896	52A1	
SP3	12"	PM	6-8Ω	49-903	12A6AZ6.4	
SP4	5 1/4"	PM	3-4Ω	49-896	52A1	

FUSES

ITEM No.	TYPE	RATING	ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG	4A 250V	136-31	62-23 15-201 (Cap)	312004 (3AG 4A 250V)	342001	MTH 4	HKP

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

REVERB PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC / RAYTHEON / SYLVANIA)
V10	Reverb Driver - Mixer	6BH8 (6CS7)*
V11	AF Amplifier	12AX7

ITEM No.	USE	TYPE
V12	Rectifier	6X4

* Used in Chassis 3F21

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C49A	▲40	450	22-3046	AFH3-43-50	C0344	XC3-29	FP376.9	TMT-3745	TVL-3786
B	■40	450							
C	▲20	350							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C50	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C51	.33 200V 10%		V84C2P33-10%		PM2P33	2DP-5-334	GEM-2033	2PS-P33
C52	1mfd 400V		P488N-1.0		ST4W1		GEM-41	4TM-M1
C53	.001 10%	Note 1	DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-DI0
C54	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C55	47 N75 10%	Note 1				*		
C56	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C57	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C58	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R74	1meg			
R75	7500Ω 4W	PW5-7500	5W-SQ-7500	
R76	39K 1W			
R77	100Ω			
R78	47K			
R79	39K			
R80	68K			
R81	1000Ω			
R82	47K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R83	47K			
R84	1000Ω			
R85	1meg			
R86	100K			
R87	10K			
R88	100K			
R89	1500Ω 2W			
R90	1500Ω 2W			

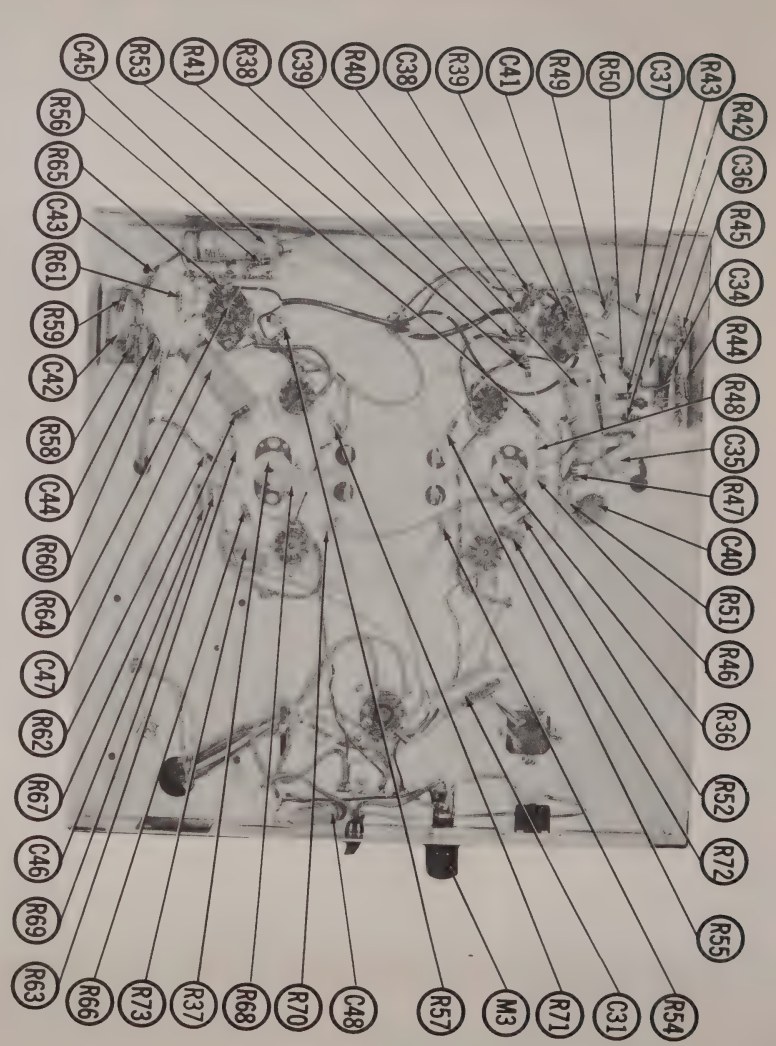
TRANSFORMER (POWER)

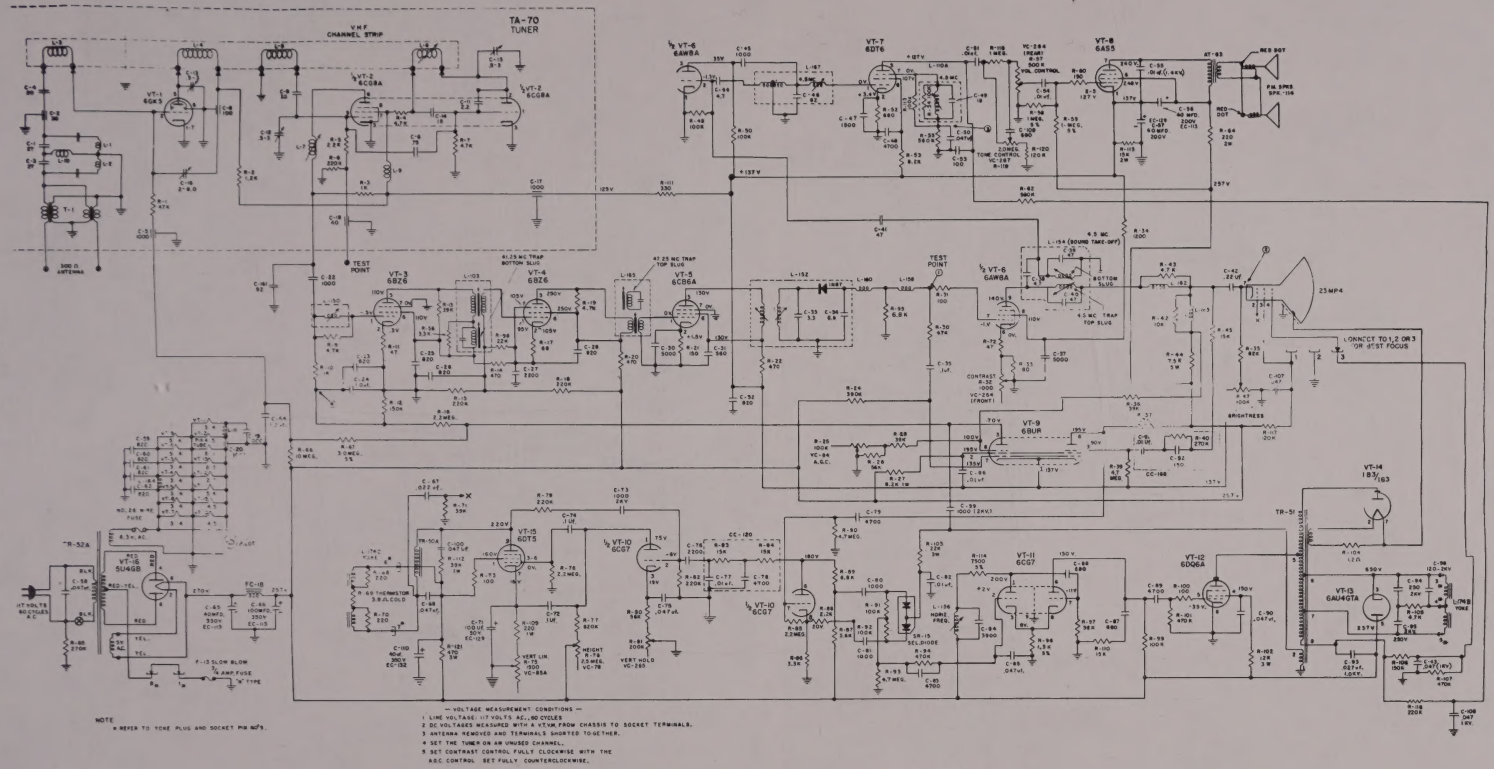
ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	117V Ⓐ .2A	620VCT Ⓐ .020A DC	6.3VCT Ⓐ1.5A	95-1791				R-105A①	① Drill New Mounting Hole(s).

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Reverberation Unit	S-51042	

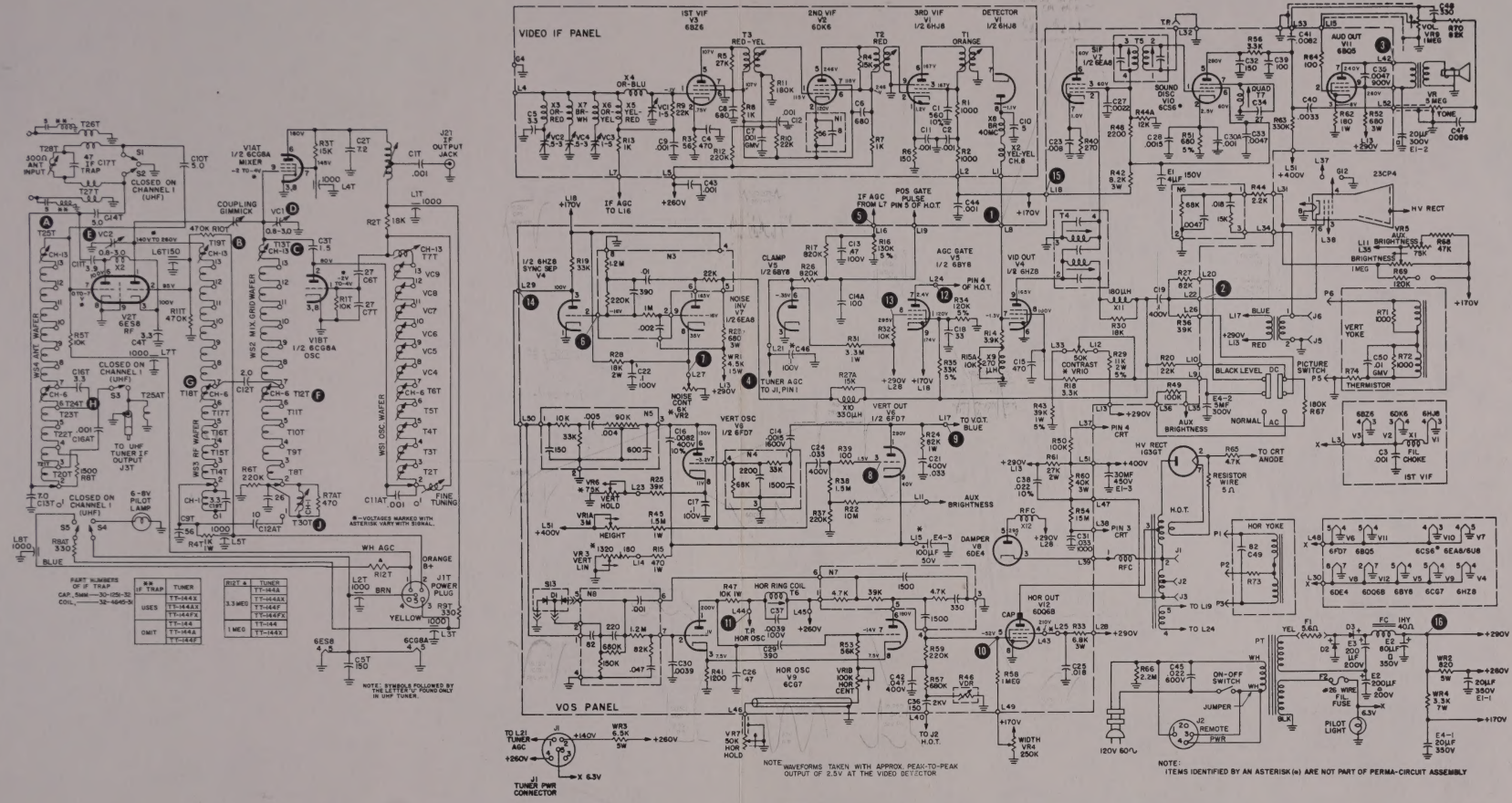
AMP CHASSIS—BOTTOM VIEW





TRUETONE MODELS 2DC1210,
2DC1211, 2DC1215, 2DC1216

Schematic Diagram Courtesy of Western Auto Supply


VIDEO IF PANEL
1ST VIF V3 6BZ6
2ND VIF V2 6CK6
3RD VIF V1 1/2 6HJ8
DETECTOR V1 1/2 6HJ8
SOUND DISC V10 6CS6
AUD OUT V11 6BQ5
SIF V7 1/2 6EA8
VOS PANEL
HOR OSC V9 6CG7
HOR OUT V12 6CQ6B
VERT OSC V8 1/2 6FD7
VERT OUT V8 1/2 6FD7
VID OUT V4 1/2 6HZ8
AGC GATE V5 1/2 6BY8
NOISE INV V7 1/2 6EA8
SYNC SEP V4 1/2 6HZ8
HV RECT 1G3GT
HOR YOKE
VERT YOKE
PICTURE TUBE 23CP4
TUNER AGC TO J1, PIN 1
IF AGC TO L16
POS GATE PULSE FROM LT PIN 5 OF H.O.T.
TO CRT ANODE
TO V.O.T. BLUE
AUX BRIGHTNESS
TO L24
TO L19
TO J2 H.O.T.
TUNER PWR CONNECTOR
REMOTE PWR
ON-OFF SWITCH
PILOT LIGHT
120V 60~
NOTE: WAVEFORMS TAKEN WITH APPROX. PEAK-TO-PEAK OUTPUT OF 2.5V AT THE VIDEO DETECTOR
NOTE: ITEMS IDENTIFIED BY AN ASTERISK (*) ARE NOT PART OF PERMA-CIRCUIT ASSEMBLY

PHILCO CHASSIS 12N53, 12N54

Schematic Diagram Courtesy of Philco Corporation

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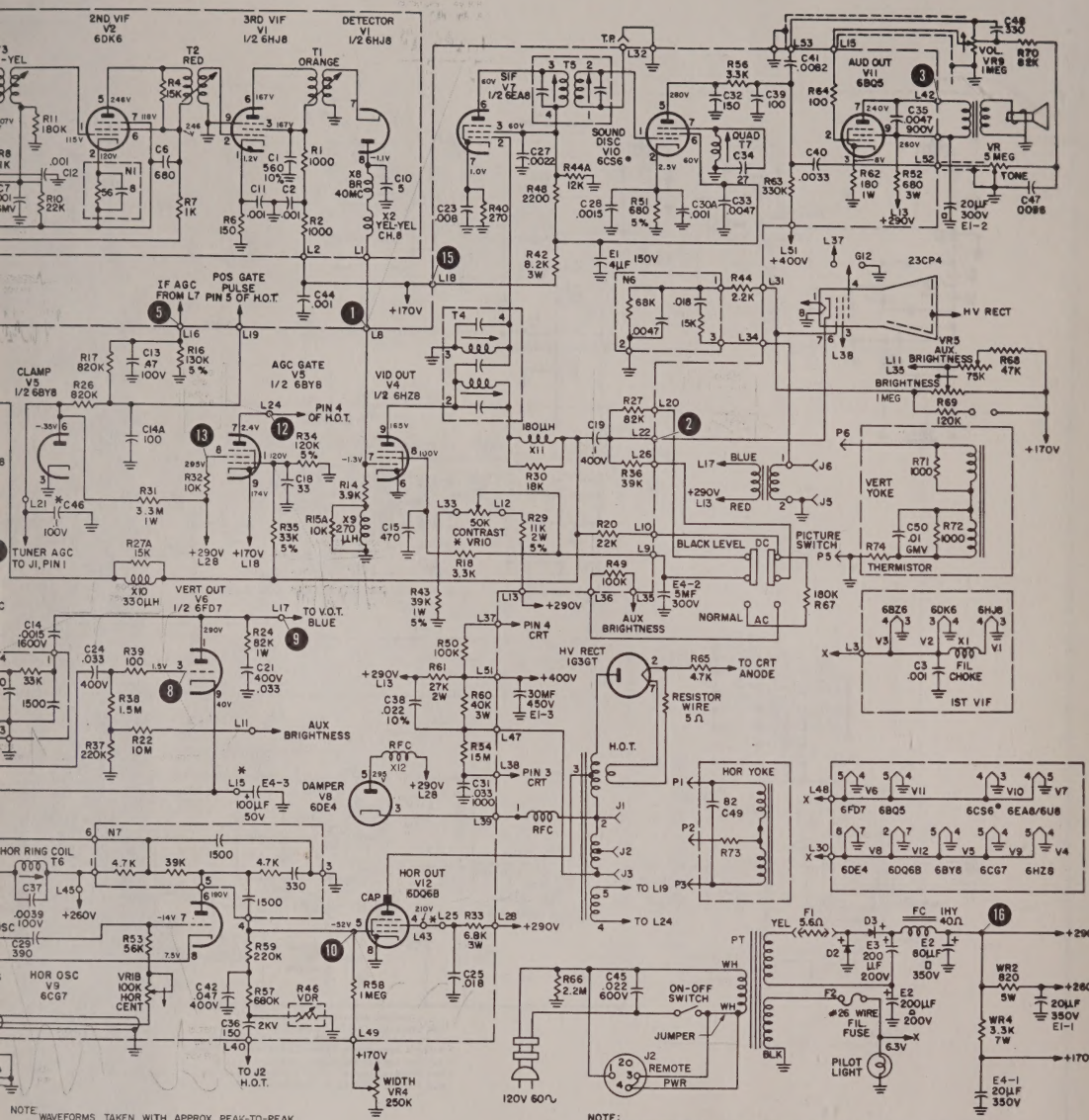

Schematic Diagram Courtesy of Philco Corporation